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June, 1916

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The Canadian Builder and Carpenter

O A Bradshaw
183 Davenport Rd
TORONTO ONT

Published Monthly by The Commercial Press, Limited, 32 Colborne St., Toronto

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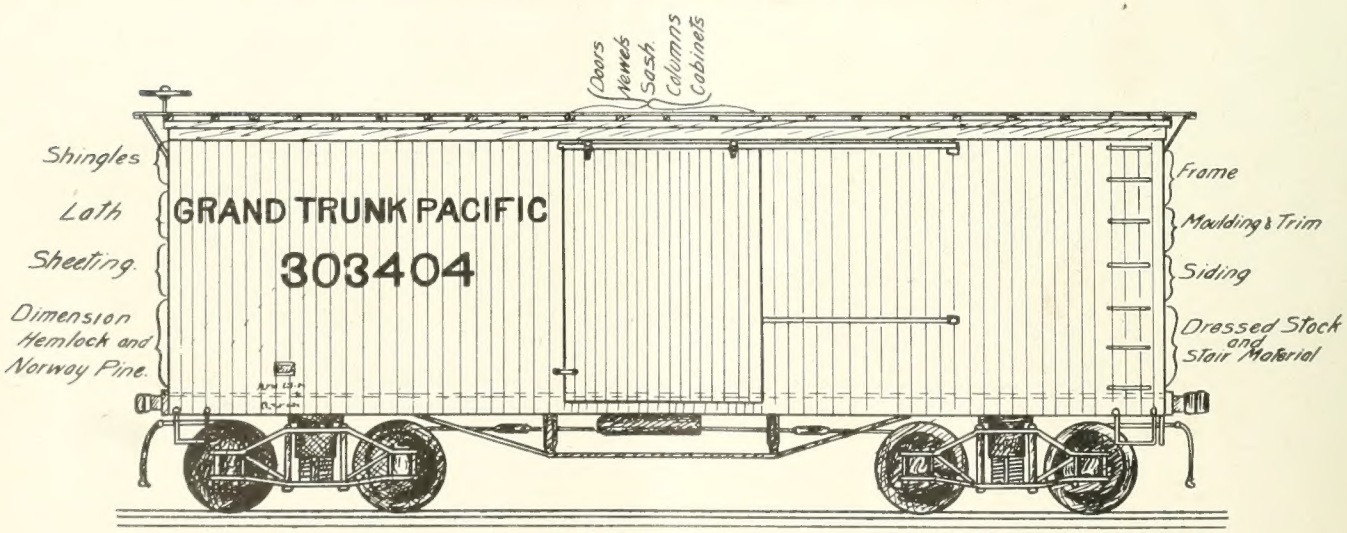

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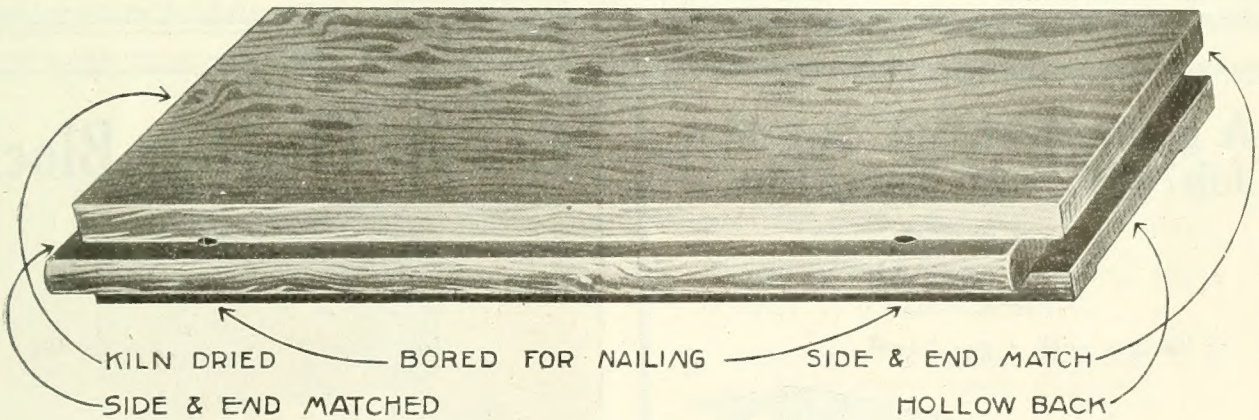

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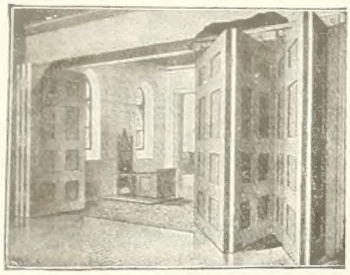

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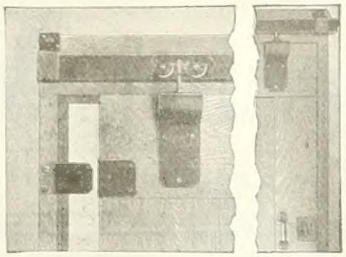

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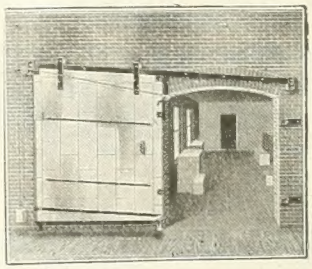

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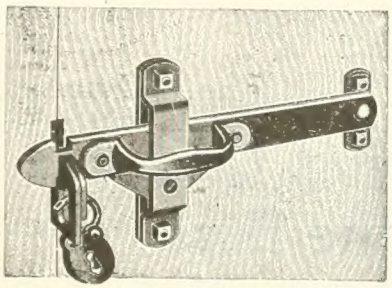

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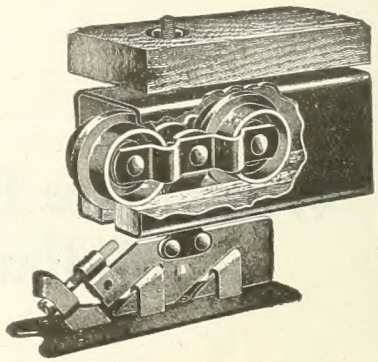

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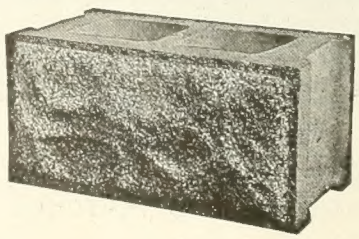

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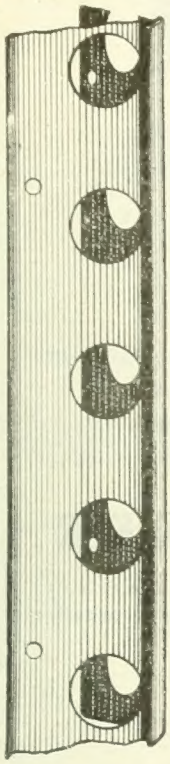

Walls are the first thing to show the effect of wear and age and lessening value. Sometimes all too quickly. Delay decay or chipped and cracking walls, and you preserve in tangible fashion the value of a building.

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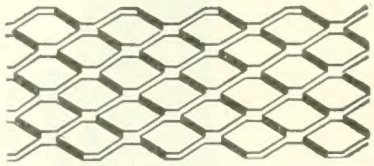

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Preserves for all time the first smooth beauty of walls and ceilings. Forms a binder for plaster that cannot disintegrate. Saves plaster. Saves labor. Ends repairs. And then—is absolutely fireproof. Think of the buildings you have put up that would have retained their first smooth beauty had Pedlar's Expanded Metal Lath been used.

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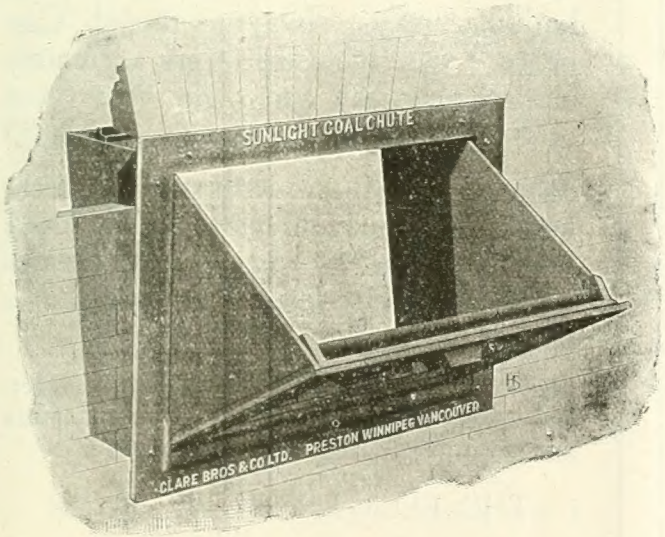

is no longer a luxury but a recognized necessity in every up-to-date building.

Open—It's a chute through which fuel can be put into the basement with ease and convenience.

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A Basement Window used for taking in fuel must be continually repainted, repaired and reglazed.

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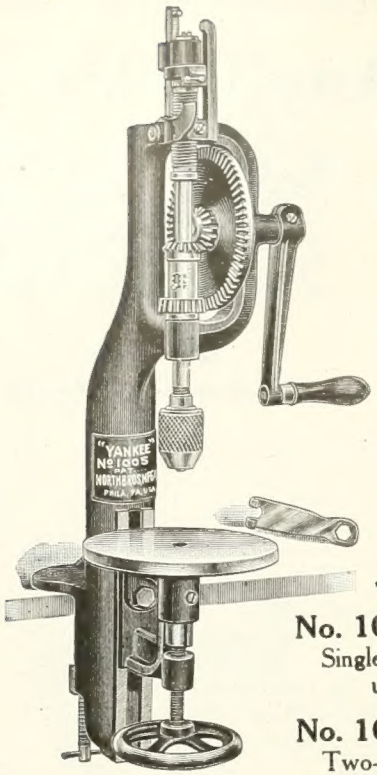

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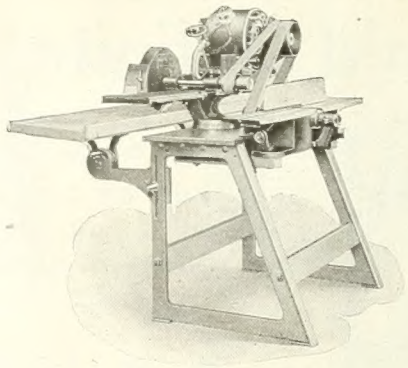

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House Out Stair Strings
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Attention!

All Cement Workers, this is the Cement Age. No cement product has a brighter future than that of the cement block, providing it is properly made. The perfect cement block must be made from the wet mix or slush concrete. We manufacture the only successful multiple-mould, wet mix, block machinery in the Dominion. We are owners of a patent for the only successful process of facing a cement block with genuine granite and doing so at a cost in proportion to the rest of the block. We give exclusive right to your territory. Secure your territory now.

Remember:

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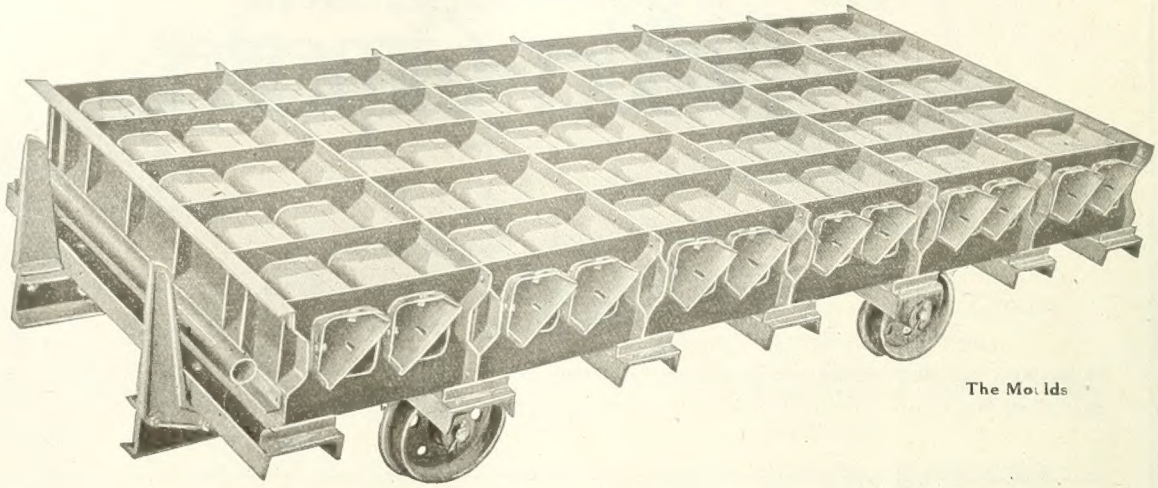

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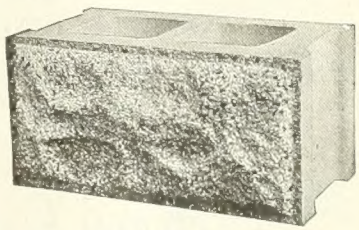
Mr. Blockmaker! What chance will you have with competition of this kind?

Send fifty cents and we will ship to you a sample block, with granite facing, freight prepaid.



The Product

Sold in Ontario—Essex, York, Peel, Ontario, Halton and Wentworth counties; also a fraction of Haldimand county. *Quebec*—Ten counties and fractions of seven additional counties.

We also have plants successfully operating in Nova Scotia, Alberta and Manitoba.

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They are the handiest derricks ever put on the market, and as sturdily constructed as they are efficient. Can easily be carried in an auto.

Weight 200 lbs. Capacity 1,000 lbs.

Only ten minutes of one man's time required to erect or take down a Sasgen—think of the saving in time in the course of a year.

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Write TO-DAY for prices and circulars of various styles

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'Handy' Concrete Mixer

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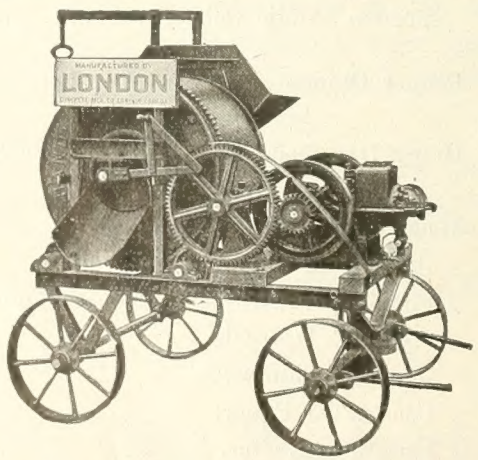

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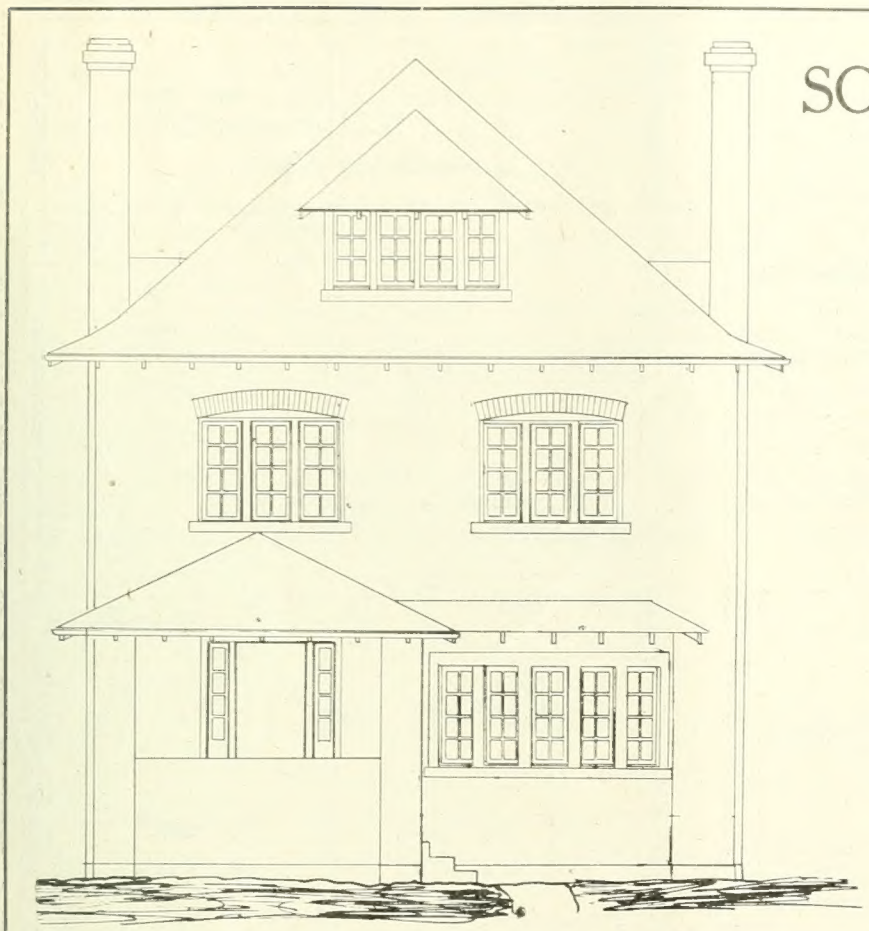


SOME FEATURES *of a* HOME-LIKE BRICK RESIDENCE

The impression this house gives is that it is built for a home. In this article an attempt is made to give builders an idea of the essential points which make this house a real home as far as the building itself is concerned.

STAFF ARTICLE

Scale —One-eighth inch equals one foot

THE idea of building a house to live in, a house for comfort and not solely for ornament, is permeating the life of the people of Canada. The house illustrated herewith is an attractive, comfortable home, well designed, of ample proportions, with sitting rooms, sun parlors, porches and all the necessary requisites of a home-like residence.

The house faces west and the sun parlors have an eastern and southern exposure. The building is 26 ft. 6 ins. wide and 42 ft. 3 ins. long. The front verandah adds 9 ft. to this length.

Front Entrance of Birch

The front entrance which is built of Milton buff brick in keeping with the house, leads directly into the hall. To the left is the stair with a hall seat in the recess backing up to the railing of the first landing.

The stairs leading to the bedroom floor are lighted by two narrow windows, one at each landing. This lights up the stairway which is hardwood throughout, and illuminates the railing which is ornamental in design.

Glass Doors Between Hall and Living Room

To the right of the hall is the living room which is reached through glass doors. The advantage of the glass doors is obvious. They light up and add beauty to the hall, give it a larger appearance and stop draft effectively, which could not be done with curtains. Also they are free from dust which usually collects on curtains.

The living room is 15 ft. x 17 ft. 6 ins. On the south side is a cosy brick fireplace, the top and trim of which with the bookcase at the left is in one piece. The fireplace has an ash dump to basement. The built-in book case at the left is neat in appearance, constructed of hardwood. It fills the space available between the fireplace and the dividing wall between the sitting and dining rooms. At the right of the fireplace the space is occupied by the piano. At either side of the fireplace are small high windows. The trim and finish throughout is Jacobean oak.

At the front of the living room is a circular bay window with casement windows which in addition to adding to the size and appearance of the living room adds much to the front view of the house.

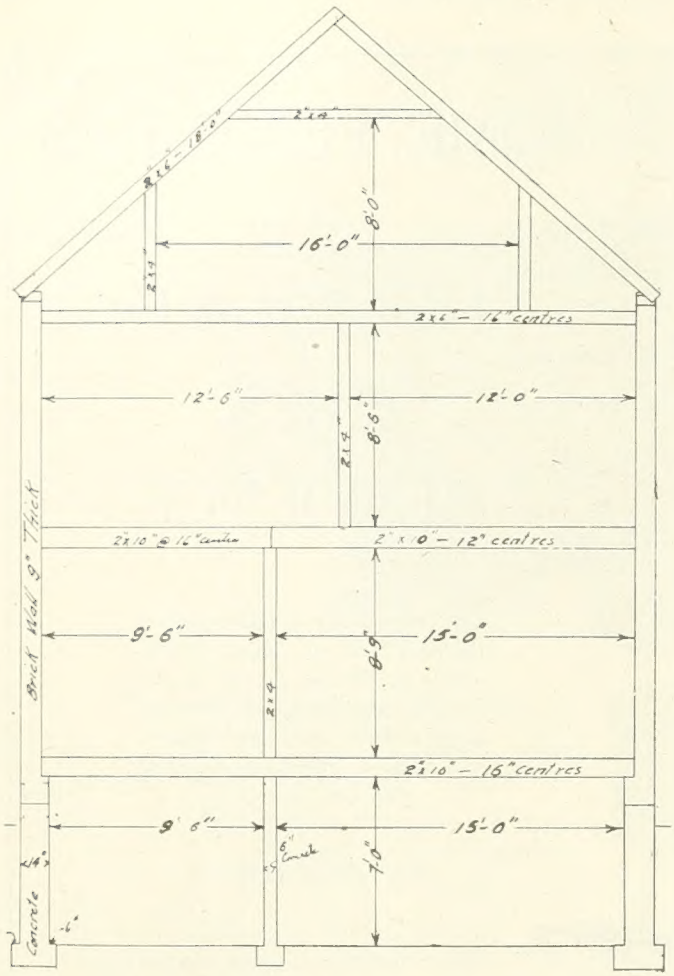
The floors in this room, as throughout the house, are hardwood. Also, casement windows are used altogether. With the small lights they add to the general air of refinement of the house.

Dining Room and Conservatory

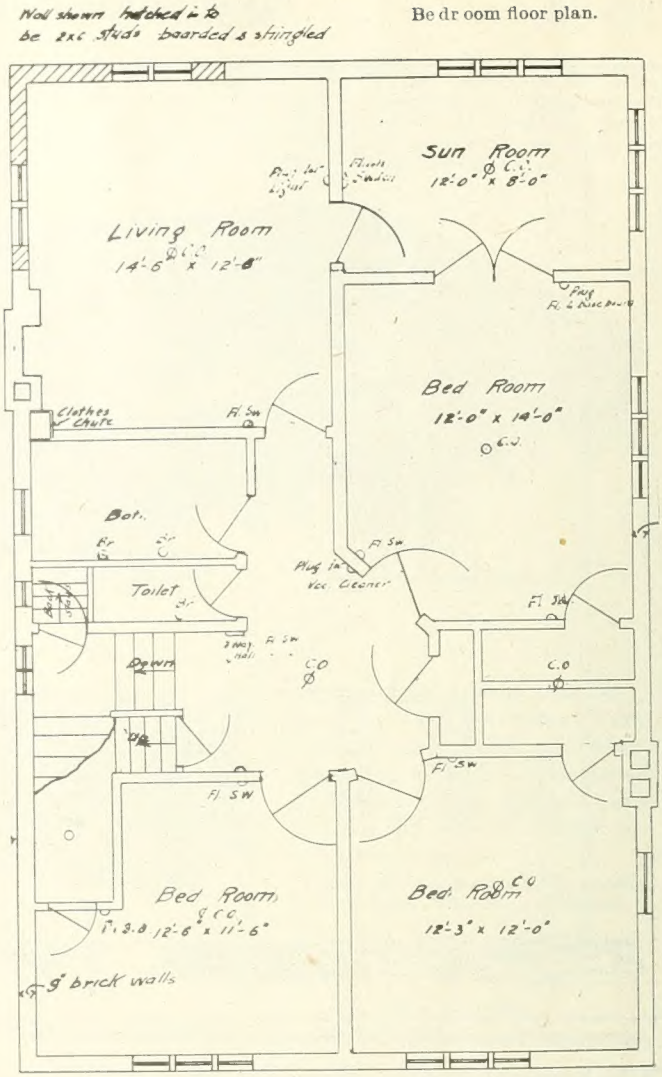
Glass doors separate the living and dining rooms. The dining room is practically a square room, being 13 ft. 4 ins. x 14 ft. with a recess projecting towards the kitchen for the buffet. Beside the general illumination there are two bracket lights as shown in floor plan to right and left of the buffet. A triple casement window facing south gives ample light, while glass doors leading to the conservatory or sun parlor give additional natural light.

Above the drip board in the kitchen is a sliding panel with an opening from the dining room to pass through dishes without having to make the trip through the pantry. At this corner also is a dumb waiter, operated from the pantry.

The sun parlor or conservatory faces south and east

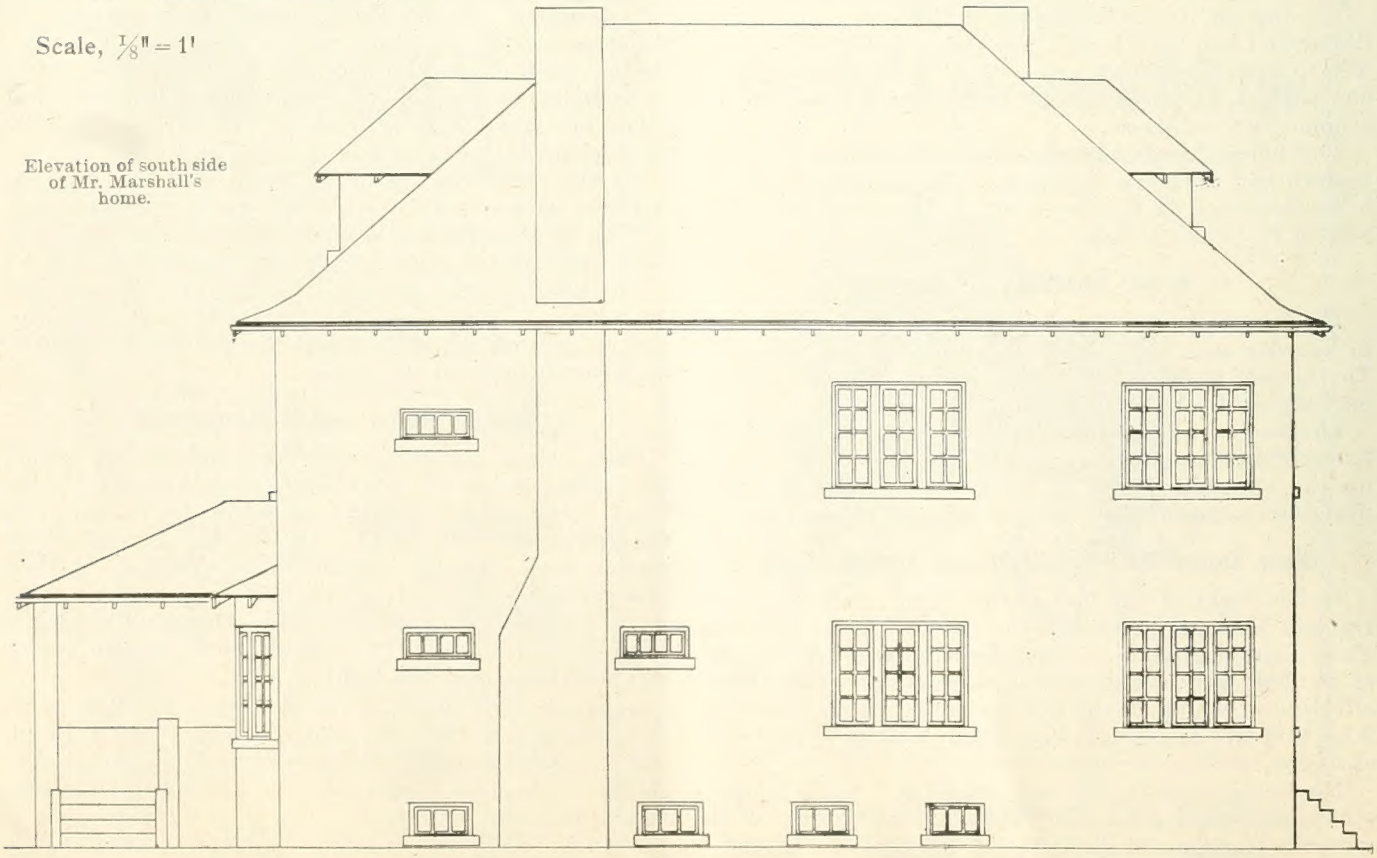


Elevation showing sizes of walls and timbers.



Brick House of Mr. Robert J. Marshall, 11 Glenholme Ave., Toronto.

Scale, 1/8" = 1'



Elevation of south side of Mr. Marshall's home.

and is 8 ft. 2 ins. x 9 ft. When the sun is shining, not only is this room lighted, but the light streams into the dining room and even to the living room brightening this section of the house very considerably. A radiator on one wall makes this room a comfortable one during the colder months.

Pantry and Kitchen

Adjoining the conservatory is the pantry containing built in cupboards, refrigerator, dumb waiter connection with basement and a small cupboard for the broom and vacuum cleaner.

The kitchen is finished to a height of about four feet with Keene cement which gives it the appearance of tile. A door leads to the back verandah over the coal room. Verandah is enclosed with trellis work. There is a connection to the chute for soiled clothes in the kitchen.

Between the hall and dining room are double doors forming a closet for coats and wraps. This also forms a private telephone booth permitting a telephone conversation being carried on with a minimum of inconvenience.

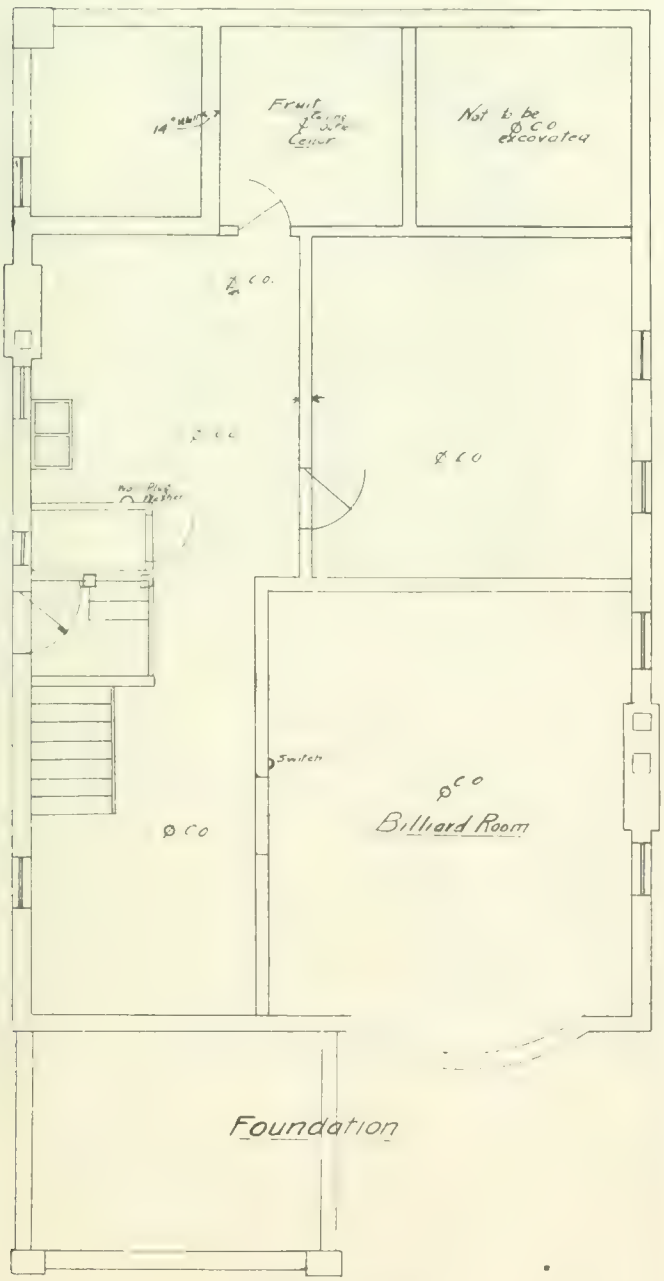
While a gas range is at present in use, the house is wired for an electric stove and connection may be easily made at any time should it be decided to install an electric range.

Basement Layout

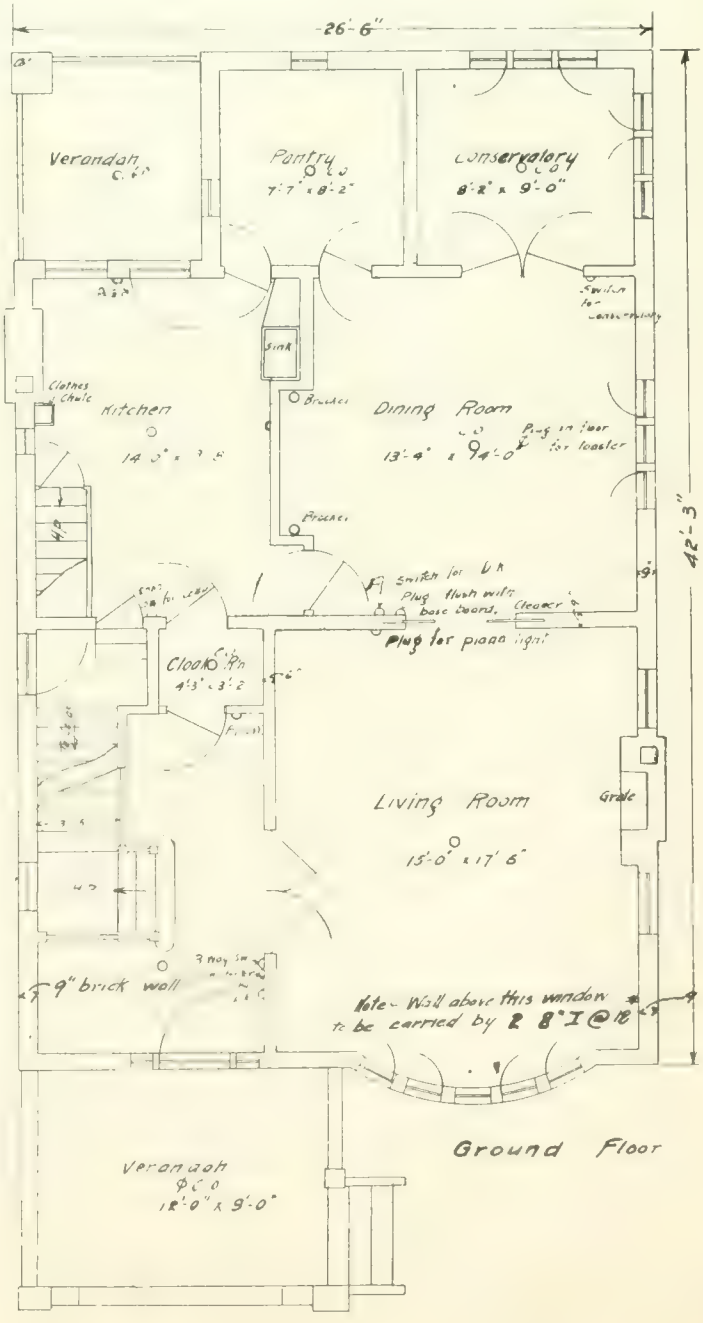
A door from the kitchen underneath the back stairs which meet the front stairs on the second landing, opens to a landing at the head of the basement stairs. Here is the side entrance door.

The basement is laid out as shown in the plan. The basement wall is of concrete up to the first floor from which the construction is Milton buff pressed brick. Weeping tile was laid on the inside of the wall. The cement wall is 11 ins. with a 24 in. footing. The brick wall is 9 ins.

In the basement are the billiard room with fireplace, general storage cellar, fruit storage, coal bin and central compartment where stationary tubs and hot water



BASEMENT FLOOR.



Ground Floor

boiler are located. Here also is a plug for an electric washer should the installation of one be decided upon.

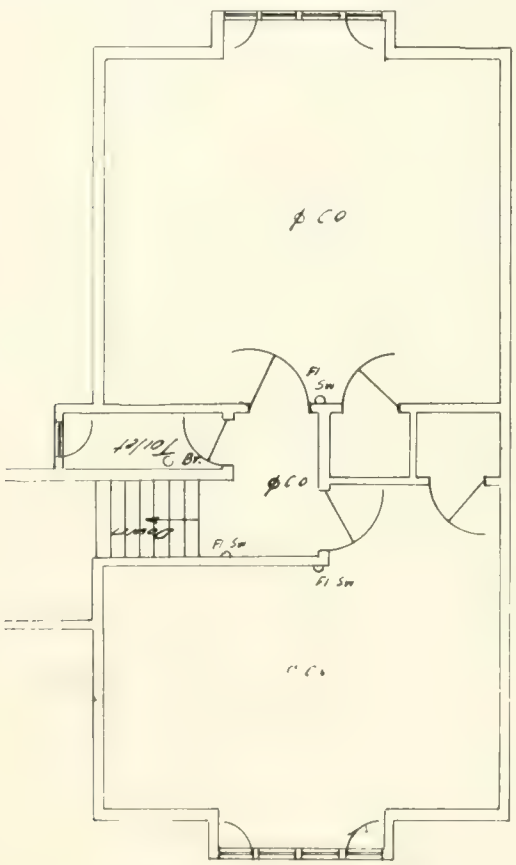
In the basement the headroom is 7 ft.; on the ground floor 8 ft. 9 ins., on the bedroom floor 8 ft. 6 ins., and in the attic 8 ft.

Features of Bedroom Floor

On the bedroom floor are three large bedrooms, living room and sun parlor. The sun parlor which faces the east and south, is really a sitting room.

The bath room and toilet are finished in Keene cement. The bath has a medicine cabinet of ample proportions and an opening to the chute for soiled clothes. On each side of the mirror are electric lights, making possible a comfortable shave.

Commodious cupboards have been provided. In the hall is the linen closet. The cupboard between the two south bedrooms is a little different from the design shown. Instead of a central partition, the recess con-



Attic layout of Mr. Marshall's house.

tains a built-in wardrobe and drawers, and a free passage, except for the doors of course, is left between the two rooms.

The front room is for the children. By locking the main door the children must pass through their parents' room. This is a valuable feature, made possible by the unique construction of the clothes closet.

The living room has a brick fireplace and a direct opening to the sun parlor, which is provided with radiator to make it comfortable during the winter months. From this sun parlor a good view of the lake may be obtained.

Attic May be Isolated

In the attic are two large rooms with large sized closets. On this floor is a bathroom with complete three-piece set; this room being enlarged from that shown on the attic plan. Thus the attic, in case of sickness can be isolated from the rest of the house.

The space under the eaves is to be used for trunk storage. In each bedroom is an opening sufficiently large to allow the passage of a trunk.

To the south of the house is a driveway with pavement leading to a brick garage at the rear of the lot.

Mr. L. B. Beale, B. C. Lumber Commissioner

A cartoon has been going the rounds showing Southern Lumbermen raking in Ontario's dollars, while in the background is piled lumber representing four hundred billion feet available lumber in British Columbia. This condition is being changed, and the three transcontinental roads are being called upon to ship millions of feet of lumber to the east. One of the men responsible for the changed situation is Mr. L. B. Beale, the British Columbia lumber Commissioner, located in Toronto. He is a firm believer in the quality of B. C.

L. B. Beale
British Columbia Lumber Commissioner, Excelsior Life Building, corner Adelaide and Toronto Streets, Toronto.

woods, and is continuously driving home the lesson as to why Ontario should buy British Columbia lumber. In this he is aided by the permanent exhibit of B. C. timber in the Excelsior Life Bldg., Toronto. Permanent exhibits have also been located in the Board of Trade rooms at Montreal and Hamilton, and at the Builders Exchange, London. Samples of Douglas Fir, Western Hemlock and Western Spruce, may be obtained from Mr. Beale on application.

Mr. Beale came east from British Columbia where he had an opportunity to become acquainted with the available timber and the facilities for putting it into marketable form. Through Mr. Beale's persuasiveness, eastern lumber dealers are establishing representative stocks of B. C. woods, and Douglas fir is being specified for many public and semi-public buildings. With the excellent work being done to acquaint architects and builders with the quality, quantity and availability of B. C. woods for every purpose the B C lumber mills will, we are sure, be kept in continuous operation at full capacity.

SOUTH ELEVATION OF THE PUBLIC SCHOOL, TODMORDEN, ONT.

Layout and Construction of the Todmorden Public School

The design of a modern brick schoolhouse with many fireproof features and low maintenance charges. Other modern school construction ideas are also described.

THE danger which is always present in non-fire resisting, or even partly non-fire resisting buildings, is in itself sufficient reason for the abandonment of these types of construction in school work if funds will permit. Not only will the reduced cost in upkeep more than justify any additional initial expense, but where non-burning materials alone are used the elimination of wood floor joists and trim results in a more sanitary building.

In the new Todmorden School the firm of Lindsay, Brydon & Greig have in a large measure accomplished both of these desirable conditions, says Construction. The building is located on a three-acre site, forming a junction with Pape avenue on the east and Torrens avenue on the south, on which the main elevation faces, which allows ample ground space for future extensions in addition to adequate accommodations for outdoor recreation purposes.

Building of Brick Construction

The design of the building, which exhibits a Greek feeling, is adapted for brick construction, and no stone is used in any part of it. The wall head copes are covered with Spanish roofing tile, and with the exception of the sills, which are of cast iron made in special moulds to fit the steel sash, the school is a completely fire clay job. The exterior treatment throughout is simple and direct; the only ornamentation used is the bands of panelled diaper work over the window heads, around the cornice of the main pylons, and under the wall head copes.

There are five entrances to the building, the central door being for visitors who may wish to consult with the principal. The boys' and girls' entrances to the front and rear are planned in conjunction with the stairs at the east and west ends of the corridors. The main corridors extend right through with class rooms on both sides, except in the south centre, where the space is reserved for light. The teachers' rooms are next to the central entrance, the principal's room being to the west, next to the class room over which he presides. Both principal's and teachers' rooms have lavatories adjoining. Between the roof of these rooms and the first floor ceiling, lighting is obtained to the first floor corridors, while over this are the windows to the corridors on the second floor. The kindergarten is planned along with the primary class to form an assembly room for ratepayers and other public meetings. These rooms are separated by sliding doors for school use, and both have north light with doors facing the central entrance, so as to provide direct exit.

Stair Construction Worthy of Note

Of special note are the stairs. These are cast in concrete and finished in terrazzo at the factory, and are built in place, one end resting on the wall. The outer end requires no stringer, the steps being self-supporting. The hand rails are brass, carried on black iron railings; and the external steps and landings are of slate with brick risers.

The structure is planned to be extended to twenty-four rooms, and provision has been made to simplify as far as possible the connecting of new work to that already existing. The new wings will extend northward, so that the finished building will be E-shaped in plan, the stairs having been placed in position to serve both the present and future requirements. All class

rooms are equipped with a cloak room and closet. They are of the usual size for public school work, seating forty-eight pupils, and are lighted from the left-hand side by large three-light windows facing in the present building, north and south.

Playrooms in Basement

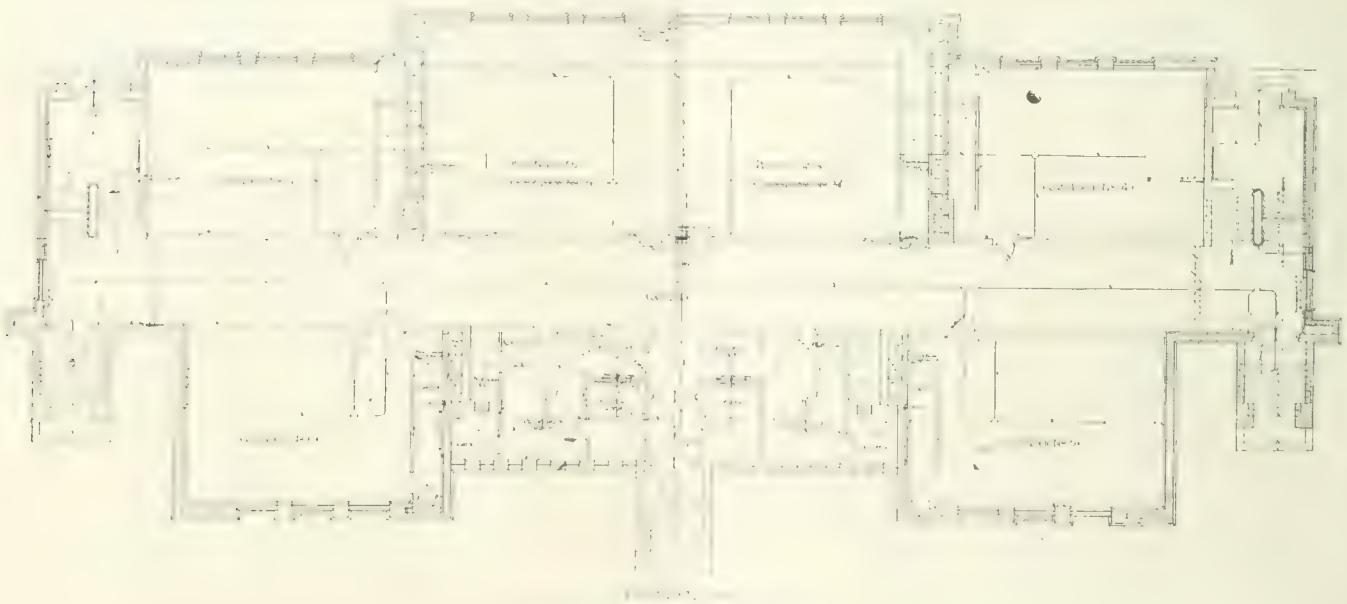
In the basement are the playrooms, lavatories and heating and ventilating plant. The playrooms are very large, with concrete floors, and give direct access to adjoining lavatories. The heating and ventilating chamber is in the centre of the building, and is laid out to take care of the completed school. Connected with it there is a dust chamber to receive the dust from the chute from the upper floors, and provision is made to conveniently remove the ashes. The lavatories are not equipped at present with fixtures, as in the district in which the school is located there is no sewerage drainage, and all rain water seepage is drained to Pape avenue. However, the drains and vents are in place, so that the installation of the plumbing will be a simple matter.

Floor System and Partitions

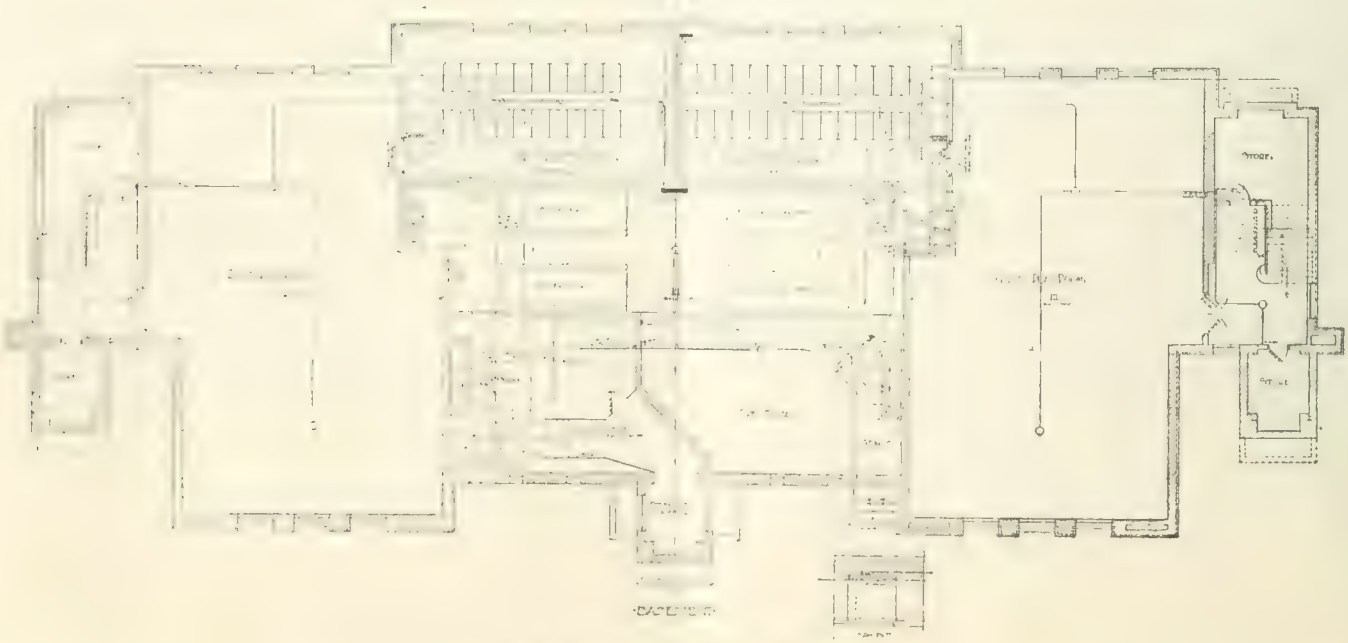
Both the floor system and partitions are of terra cotta tile carried on structural steel. The floor tile is finished on top with cinder concrete to give a base to the flooring, and the exterior walls are of pressed brick in varied tones, with special made moulds for base and cornice.

The interior walls are furnished to sill height with a Keene's cement dado, and plastered above with lime plaster. In the coat rooms the Keene's cement is carried to the coat rail. The blackboards used are slate.

The flooring is of fireproof composition, an attractive buff in color with dark borders, and a sanitary wall base. The special design of the floor of the kindergarten room is shown in the illustration. It contains a novel feature in which marching paths are marked out in various colors in a design worked into the floor-



First floor plan, Todmorden School.



Plan of basement, Todmorden School.

Todmorden School. Top, north elevation; centre, basement playground and expansion corridor gates; bottom, fireproof stairway and corridor.

ing material, this being the first time this method of permanently marking a floor has been adopted in a Canadian school. Besides being attractive, it provides a sanitary dust proof floor, the fireproof feature of which should be considered every time a school is erected.

Ventilation System

The air for ventilation is drawn over ventu stack radiators and delivered in the usual way through galvanized iron ducts to the foot of vertical shafts built of terra cotta tile. These shafts are graduated to give equal velocity throughout; the extract shafts from the coal rooms exhausting to the roof space, which is relieved by star ventilators of large capacity.

Roof Construction

The roof is felt and gravel on its highest elevation, and flat slate on felt where seen from the windows,

Class room of Todmorden School.

with the exception of the porch roofs and wall head copes, which are of Spanish red tile, as above mentioned.

Doors and Windows

The interior doors throughout the building with the exception of the basement, are of steel. The external doors and frames are kalamined in brush brass and are of local manufacture, the basement door being also kalamined steel. The windows are of steel casement type, glazed with plate glass and are arranged to ventilate the rooms without direct cold currents blowing on the pupils. The basement windows are factory sash glazed with wire plate glass. All doors and window frames except the doors of the brass kalamined type previously referred to, are finished with flat enamel in pleasing green tones.

The corridors are closed when the scholars are not in the rooms by expansion gates. This prevents running through the school and excessive tracking of the floors in consequence.

Proper Chimneys for Summer Kitchens

Builders should insist on proper chimneys being constructed for summer kitchens. The following prepared by the Commission of Conservation, gives the reason very forcibly:

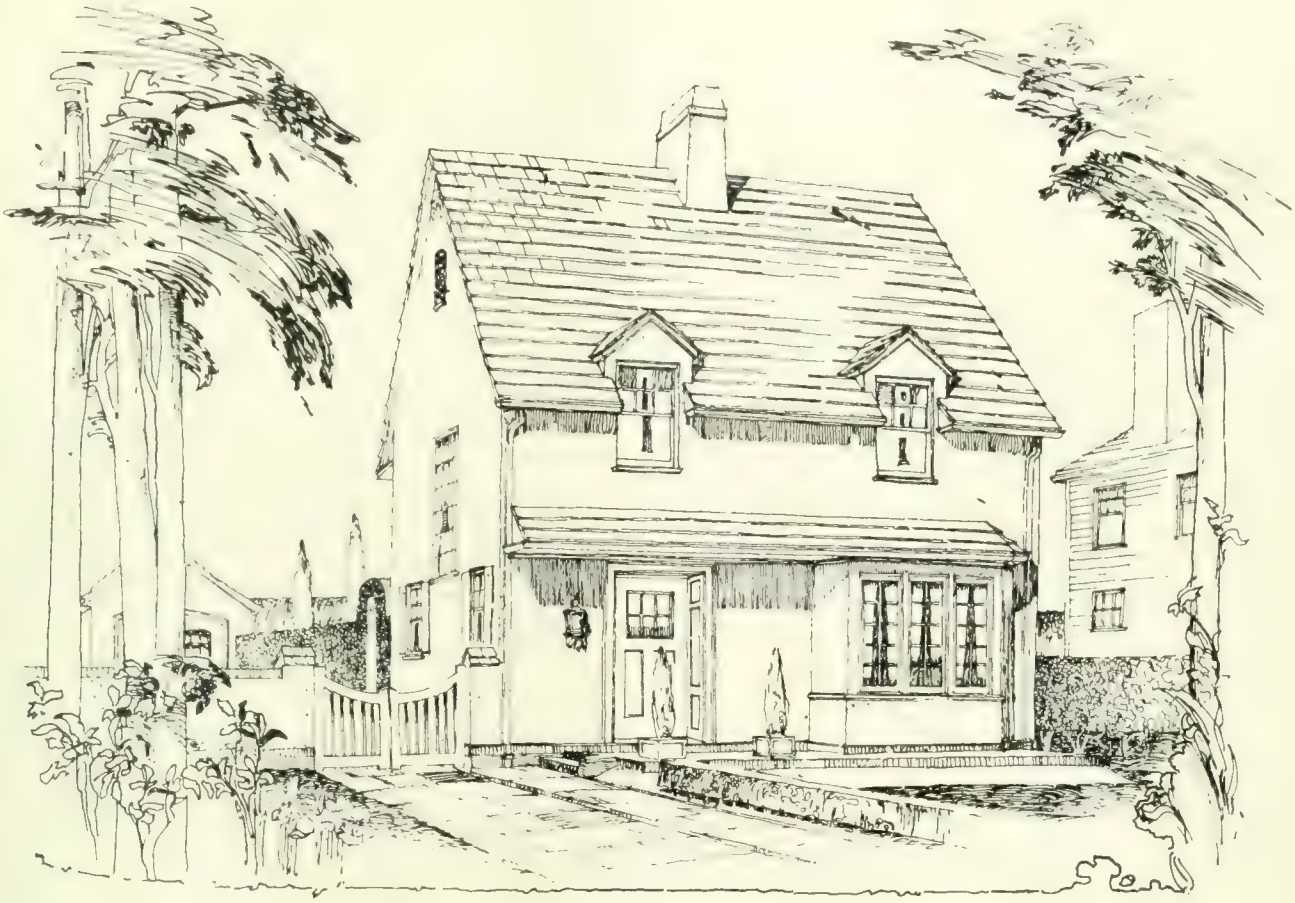
A sequence of the annual spring housecleaning period in the home is the exodus of cooking stoves and ranges to the summer kitchens. This removal involves a considerable fire risk. The summer kitchen naturally suggests a building of more or less flimsy construction, usually a frame lean-to without a proper chimney. Too often a stovepipe through wall or roof serves as a smoke outlet, without even protection of the surrounding woodwork.

The same care should be exercised with stoves and ranges in summer as in winter. Woodwork should be protected by sheet metal, with at least two inches of air space between the metal and woodwork. Sheet metal should also be placed under the stove, projecting sufficiently to overcome the danger from live coals falling upon the floor.

Proper and safe chimneys should be provided, and, where necessary for pipes to go through frame partitions metal thimbles, provided with ventilated air spaces, should be used.

Insurance companies will not knowingly accept as a risk any building in which stove-pipes issue through roof or sidewalls. Should such a condition be established and a fire occur from this cause, the companies are not called upon to pay the loss, the policy being void. It is therefore of the utmost importance to provide safe equipment for stoves in summer kitchens.

When an employer puts a young man under twenty-one years old to work, it is incumbent upon him to carefully instruct and warn the youngster of whatever dangers may be involved in his work around machines.



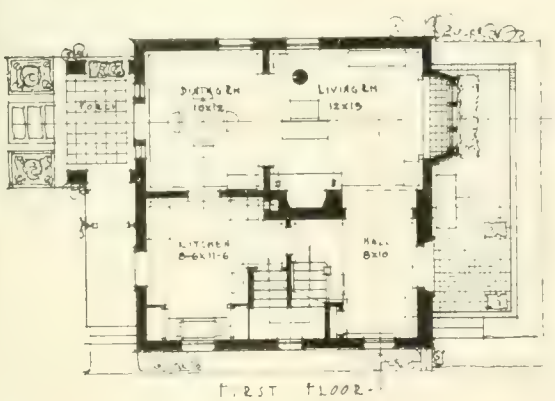
House Designed to be Built for $3,000

The house shown herewith was designed by H. W. Peebles and Richard W. Hazlewood, of 82 N. Elizabeth St., Detroit, who present a very original design as their notion of what constitutes a model home for $3,000.

The paved terrace across the front, with its narrow suspended covering, its big bay window and steep roof, gives a suggestion of a quaint old type, modernized for present-day use.

The large hall, with the combined stairway, under which access is gained to the kitchen, are features of a good floor layout. Two large bedrooms and one small one for maid or for use as a nursery distinguish the sleeping portion.

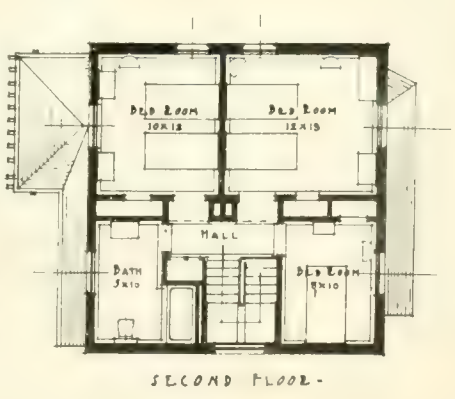
The garden is well arranged to give a sightly view from the porch, which opens off the dining room. This house lends itself readily to the use of stucco, with dark roof and window trim, as shown.



One of the prize houses at the Cleveland Show. Designed by H. W. Peebles and R. W. Hazlewood, Detroit.

HOUSE CUBAGE AND COST

Body 25 1 3x25x27 ft. equals 17,100 cu. ft.
Porch ¼x6x11x12 ft. equals 198 cu. ft.
Bay 3x8x12 ft., equals 288 cu. ft.
Total cubage, equals 17,586 cu. ft.
Cost, 17586x17 ft. equals $2989.62.



What Do Our Readers Suggest?

Here are several questions asked by readers of The Canadian Builder and Carpenter. In the past we have sent replies by return mail, but ask readers' help to-day. Readers sending acceptable replies to one or all will have their subscription to The Canadian Builder & Carpenter extended for one year.

Preventing Dampness in Walls

After receiving so good an answer to my last enquiry I am coming again. I have a house that is giving considerable trouble with dampness on the walls. It is heated and lighted with natural gas. Is it in the planning or layout? If you can throw any light on the matter I would be greatly pleased.—Ontario Subscriber.

The correspondent was asked for more information regarding the construction of the house and his second letter follows:

The house in question has a concrete foundation with cellar under part of it. The superstructure is frame, lined on outside of studding with matched hemlock, then paper and lap siding. The dampness I complain of is not in the cellar but in the rest of the house. The gas stoves are located in the kitchen and dining room, almost in the centre of the house. The natural gas is used for both heating and lighting and the stoves are equipped with stovepipes. The closet and bedroom above the kitchen, and therefore immediately above the stoves, were quite damp.

I have just heard of another house where they have started to use natural gas instead of wood and oil and they, too, are experiencing trouble with damp walls.—Ontario Subscriber.

Reply re Dampness in Walls

The following reply is from Mr. Geo. W. Allen, Advertising Manager of the Consumers' Gas Co., Toronto, who has had a wide experience and for several years was actively engaged in the natural gas region of Ontario, as a gas appliance engineer.

Dear Mr. Keith:

I am sorry to have kept you waiting so long for an answer to your question regarding the prevention of dampness in walls, caused by burning natural gas.

In answer to same would say; my experience in the natural gas field covering five years time brought me into contact with many cases of dampness caused by the improper use of natural gas. I found in my experiences that most of these cases were caused by the improper use of natural gas. I found in my experiences that most of these cases were caused by the combustion of gas in such appliances as self feeder stoves, box stoves, coal ranges, and coal furnaces, and not sufficient secondary air while being burnt. It is necessary to have sufficient ventilation in all gas appliances whether using natural gas or artificial gas to complete the combustion of the gas. If this is not done, there is sure to be trouble through escaping fumes, which condense on the cold walls of rooms, etc. Each case should receive individual attention if possible, as it is rather difficult to give accurate directions on how to overcome this.

I have known cases where the people burning natural gas have tried to shut up every possible opening in the stove, thinking perhaps that they might save some of the heat. This is a mistake. No one would think of shutting up a coal stove and expecting it to burn, because all fuels require a certain amount of secondary air to complete the combustion. The air mixers supplying primary air to the burners should also be given consideration, but one of the main things to attend to is the flue pipes and chimney. These should be kept clean and should supply sufficient draft to the appliance in order that fresh air can be supplied to the burner. I have found cases where people have shut off dampers in the flue pipes, thinking they would save some of the heat which apparently was being wasted up the chimneys. This too, is a mistake. In some cases the pipe dampers have to be shut off a trifle, but only where the draft is excessive. Also see that the chimney is not stopped up with soot. I have been to homes where the chimneys were quite clear of soot, but a day or two's operation of the natural gas appliance would loosen some of the soot clinging to the sides of the chimney between the opening to the sides of the chimney between the opening and the roof, and this would fall down into the opening near the vent and block it up.

When an appliance is installed and has been in use for a few days, it is well to again see that the flue opening into the chimney is clear, but above all things give the appliance the proper amount of ventilation to perfect the combustion.

Yours very truly,
(Sgd.) GEO. W. ALLEN.
Advertising Manager.

Plans for Workmen's Houses and a School Wanted

Editor, Canadian Builder and Carpenter, Toronto:

Dear Sir—We have some building to do here in the near future and desire plans and specifications covering double houses containing about six rooms each, that is twelve in all. We prefer concrete block construction at an estimated cost of $1,200 for each double house.

We also intend erecting a small school house, at an estimated cost of $1,500.—Ontario Subscriber.

Mr. J. F. Rhodes, of the Canada Cement Co., to whom the inquiry was referred, replied as follows:

Dears Sirs:—

We are very sorry we have been so delayed in answering your letter of April 10th in regard to houses, but it has been impossible for us to take this matter up sooner and give you definite information.

We are attaching, herewith, a sketch of a twelve-room double house, which we believe would probably meet your needs. In the cross-section we have shown the roof as a gable roof and then have dotted in a shed roof. We believe that you would find the shed roof cheaper, because it could be built very flat (a slope of 1 inch to the foot) and a tarred felt roof could be used.

We have designed this house for a foundation wall 12 inches thick of a concrete composed of 1 bag of cement to 3 cubic feet of sand and 5 cubic feet of stone or gravel; for a building wall for concrete blocks 8 inches thick and the interior of the house finished the same as for a frame house. The number of blocks that you would require for each double house would be 2,500. These blocks could be made by the use of a Block machine, which can be obtained either from the London Concrete Machinery Co., London, Ont., or the Ideal Concrete Machinery Co., Windsor, Ont., or you could build gang molds out of planks, forming the shape of block you desire. However, we would suggest that you write the London or Ideal people and get information from them on block construction. The cost of the blocks will depend upon the cost of local materials, but a block made in the proportion of 1 part

of cement to 3 parts of sand; or 1 part of cement to 2 parts of sand and 3 parts of crushed stone or coarse gravel will be satisfactory. The latter mixture is the cheaper and gives better results, if the stone is obtainable. In using stone, we would suggest that it be graded from ¼-inch up to 1-inch in size. The cost of laying blocks of this type generally ranges from 4 to 5 cents per block, this including the handling of the blocks, mortar for the joints and laying.

If this building is larger than you wish to build and more complicated, and you feel it would cost more money than you wish to put in one, we would suggest that you return this plan to us with your criticisms and corrections, and we will try to give you a scheme as you desire.

In figuring the foundation we are unable to tell you how much concrete you will require, as we do not know whether you would wish to have a cellar or whether you just want a foundation wall. However, we can tell you what each cubic yard of material will take. For a 1:3:5 mix, each cubic yard will require 1.16 barrels of cement, .52 of a cubic yard of sand and .86 of a cubic yard of stone or gravel.

We believe this letter together with the plan attached will give you information with regard to this work.

Concrete Chimney

In reply to a Toronto subscriber, the following article on concrete chimneys for houses and small buildings, is given:

Defective flues and poorly constructed chimneys are the causes of most of the fires in dwelling houses. On this account the chimney is one of the most important structural features of the building, and it is the opinion of architects that the money spent for a good chimney is one of the best investments.

A properly constructed concrete chimney should have as few joints as possible, for it is at the joints that the fire finds its way through to the surrounding structure. A concrete chimney when built as a solid monolithic will be entirely free from joints and thus will eliminate the danger of fire from this source.

Forms—In building the outside forms, the two side forms can be made continuous throughout the entire height and should be well braced in a vertical position. For the end faces boards can be nailed on as the construction of the chimney progresses. As the concrete at the bottom hardens, the lower boards can be removed and used again at the top, thus promoting greater economy.

The inside of the chimney can be made either square or round, but the round flue is preferable on account of its greater efficiency. In square or rectangular flues there are dead air-spaces in the corners which are apt to induce cold air currents up and down the chimney and cause the accumulation of soot.

Where a round flue is built the forms can be greatly simplified by using terra cotta or dense concrete tiles. These tiles may then be left in place.

Size and Reinforcing—All flues should be of ample size and should be carried as straight as possible to a point above the highest part of the roof. They should be independent, having no connection with other flues or openings, and should have the same area throughout.

For heaters the flue should start at a point near the cellar floor, about 3 or 4 feet below the smoke pipe entrance, and should be provided with a cleanout door at the bottom for the removal of accumulated dust and soot. Its size should never be smaller than the smoke pipe leading from the heater.

For heaters and kitchen ranges either an 8-inch or 10-inch flue will do, but the 10-inch flue will probably give the better service. The 10-inch flue is the size most commonly used, but this will, of course, vary somewhat under special conditions.

For fireplaces the size of the flue is governed by the fireplace opening. For burning wood or bituminous coal the flue should be 1-10 to 1-8 of the opening, and for anthracite coal 1-12 to 1-16 will suffice. Where trouble with down-drafts is encountered, it is advisable to put a revolving top on the chimney.

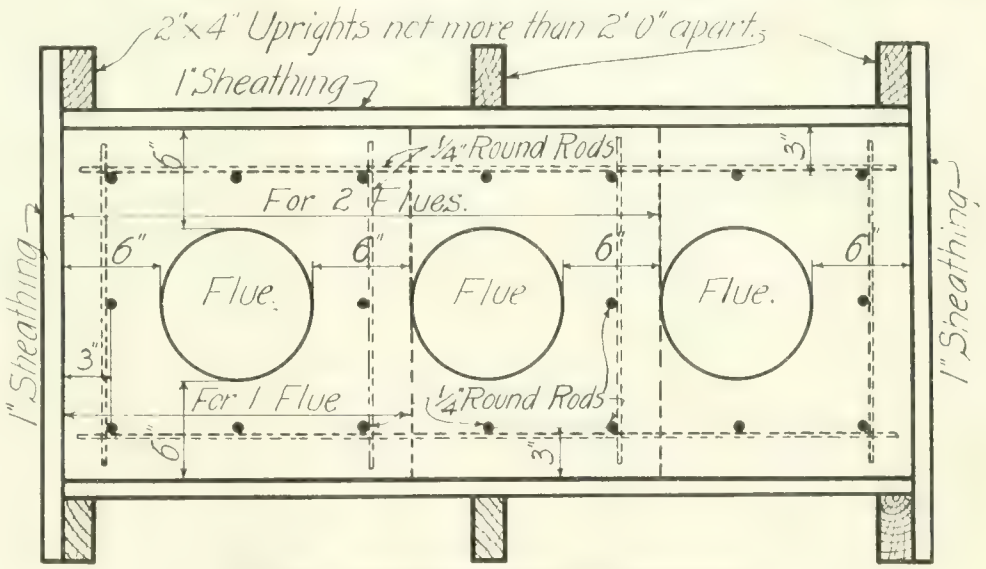


Illustration which shows construction of concrete chimney.

The thickness of the concrete from the flue surface to the outside of the chimney and between flues should be not less than 6 inches, although for small flues 4 inches will sometimes be sufficient. Vertical reinforcing rods, ¼ of an inch in diameter, should be placed in the corners and at the centres of the sides. Horizontal rods, ¼ of an inch in diameter, should be placed on all sides, 12 inches apart, and should be securely wired to the vertical rods where they cross. By this means the reinforcing will form a rigid frame before placing the concrete.

Construction—All chimneys should have good foundations and should be built independent of the house. They should preferably be carried to a depth equal to that of the cellar, but at least below the frost line, usually 4 or 5 feet. The foundation consists of a slab 12 to 18 inches thick, and 9 inches larger on every side than the outside dimensions of the chimney.

The concrete should be of a fairly wet mixture, in the proportions of 1 part cement, 2 parts sand and 4 parts broken stone or gravel, ranging in size from ¼ of an inch to 1 inch or 1¼ inches. The concrete should be well spaded when placing to make it dense and waterproof. It should be placed preferably in one continuous operation, but where this cannot be done

care should be taken to get a good bond between the work done the previous day and the fresh concrete. This can be done by thoroughly scrubbing the old surface with a stiff brush, using a mixture of cement and water. Then place a layer of mortar about an inch thick, consisting of 1 part cement and 1 part sand. The old surface should be left rough, with a stone sticking out to afford a mechanical bond.

Where the chimney passes through the roof there should be no offset, but provision against leakage should be provided by the use of copper flashings. The part above the roof can be finished in any ornamental way desired.

Use of Tar Paper

I am building a house of cobble stone and cement with 9-inch walls with bond strips laid on the inside for strapping. Would it be of any benefit if I tar papered the walls before strapping?—Enquirer.

Length of Rafter

I would like to see the following questions answered in The Canadian Builder and Carpenter; they are taken from a text book and I have spoken to two or three parties, but cannot arrive at the answer given in the text book:

Give the length of hip rafter for building 25 ft. wide with a rise of 10¾ ft.; also the length of hip rafter for building 24 ft. wide and rise of 10¾ ft.—J. P. B., Winnipeg.

Strength of Wall

I am living in my own house. It is semi-detached, and the gentleman next door is sharing the cost of putting a cement block wall between the two houses, as we are only clapboarded, and we stand on concrete pillars. The questions I would like answered are as follows. The pickets are of 3 to 1 mixture 18 in. square 3 ft below ground on a 2 ft. base, four of these 6 ft. apart, and resting on top is an 8 in. x 9 in. pine 30 ft. long, and the joists are 3 x 9 pine 20 in. centres. Is that strong enough to carry the wall 22 ft. high without a foundation? We have put 10 feet in already, but thought I would wait for your reply before continuing, although I have rented my upper flat for the 1st of May and have not much time to spare to get it finished.—Quebec Subscriber.

Answer (copy of this sent to subscriber)—The size of piers and the strength of the stringer have been checked up by an engineer of the Canada Cement Co., Montreal, and he finds that it will be safe to proceed with this work, provided the stringer is in good condition, i.e., that it does not show any signs of rot or a large proportion of knots on the under side.

As a reader will understand, it is impossible for us to state definitely that this construction is entirely safe, as it depends on the conditions of the timber. However, if it fulfills the conditions stated above, the work will be perfectly safe.

Quantities of Concrete in Basement and Mixture to Use

Question—Will you please find space at some future date to give the quickest way to get the quantities of concrete in basement walls and the right mixture to use.—Subscriber.

Answer—In order to compute the quantities of concrete in basement walls, the following method is advised:

Add together the four dimensions of the building, deduct four times the thickness of the walls from this and multiply this result by the height of the wall in feet and by the thickness of the wall in feet.

In foundation work, it is advisable to place a footing under all walls, so as to give more bearing. The footing generally used for basement walls which do not exceed 1 in. in thickness, is a footing 6 in. thick, whose width is twice the thickness of the wall. In computing the quantities, you then add one more foot to the height of the wall, which will make up for the footing.

As an example, assume you have a basement wall 20 ft. x 30 ft. x 7 ft. deep and 1 ft. thick. You will then compute it as follows:

20 plus 20 plus 30 plus 30 equals 100, minus four times 1 equals 96; 96 x 8 equals 768 cu. ft., (which includes the footing times 1 in. thickness) equals 768 divided by 27 equals 28.44 cu. yds.

The mixture that should be used for this work will depend upon the type of wall desired. If the wall is to be waterproof, so as to make a dry cellar it should be made of concrete composed of 1 bag of cement to 2 cu. ft. of sand and 4 cu. ft. of gravel. If it is just an ordinary foundation wall, it should be made of a mixture composed of 1 bag of cement to 2½ cu. ft. sand and 5 cu. ft. gravel or crushed stone. The amonut of materials you would require per cu. yd. are as follows:

For the 1:2:4 mixture: 6 bags cement, 45 cu. yd. sand and 90 cu. yd. gravel or crushed stone.

For the 1:2½:5 mixture: 5 bags cement, 46 cu. yd. sand, and 92 cu. yds. crushed stone or gravel.

Trusting this gives you the information you desire, we are,

Yours very truly,
CANADA CEMENT COMPANY LIMITED,
J. F. Rhodes,
Manager of Publicity.

Some Facts About Limestone

A ton of absolutely pure limestone would burn to a little over half its weight of lime, or about 1,120 pounds, which, counting 80 pounds to a bushel, would give 14 bushels of lime to a ton. The weight of the burned product, however, generally averages more than this, owing to impurities in the limestone, and also because in ordinary kilns the combustion is not complete enough to drive off all the carbon dioxide.

A cubic foot of limestone averages in weight from 145 to 175 pounds, which would make a ton of limestone contain from 11 to 14 cubic feet.

Cassidy Obeys Orders

The foreman swore at Cassidy for not fully loading up his hod. The hod, he said, would hold so many bricks and Cassidy must take a full load up the ladder every trip.

One morning the supply of bricks ran out, and Cassidy, after gathering every brick in sight, found he was still short of the proper number. He yelled up to a workman on the fifth story.

"What do you want?" asked the workman.

"Throw me down wan brick," shouted Cassidy, "to make good me load."

Carpentry and Woodworking

Design of a Kitchen Cabinet

The accompanying illustration reproduced from the Woodworker shows the design of a kitchen cabinet. Full dimensions and details of construction are given, making it easy to follow the general design. Variations may be made to suit conditions in either the height or width. In such cases drawings should be made so that no error or wastage of material can occur.

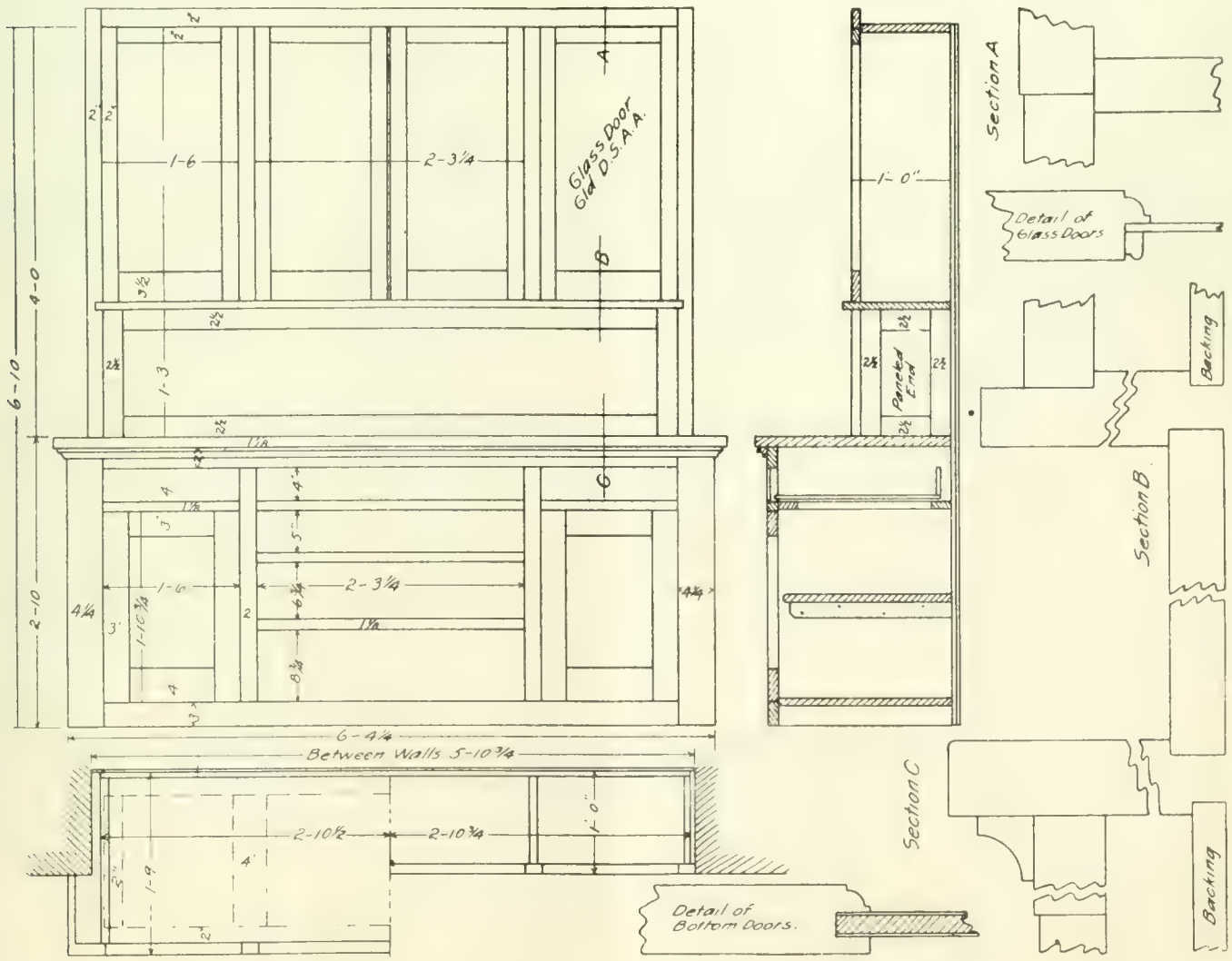
Some Finishes for Oak

Oak, when properly handled, is one of the most popular and also one of the most beautiful woods used to-day. It does not receive its just value in many cases because of carelessness.

First, in most cases, it is not properly matched. This could easily be avoided if a few minutes' time and attention were given to this matter. There is nothing looks worse than a small and large figured piece glued together; yet many pieces of this kind are seen.

Generally the finisher has more trouble with oak than with any other wood, on account of the many different colors. This is not his fault, and it is impossible for him to prevent it.

Next, not enough attention is paid to the sandpapering of the wood. Most people think all that is necessary is to get the surface smooth, but that is a mistake. Two-thirds of the muddy and different colored parts are the fault of the sander. Too much care cannot be taken during this operation. Oak should be sanded with very rough paper, so as to tear the wood up. That will give you a greater depth of color. Then



Design of a kitchen cabinet, full details and dimensions being here given.

the wood should be papered off with fine sandpaper until the lights are free from scratches and as clear as glass. The higher the polish on the lights, the clearer your color will be.

There are many different ideas as to what the color of oak should be. Each finisher generally has a formula of his own, but my intention is to use, as much as possible, stains that can be procured easily at reasonable prices in this country.

A rich tone of golden oak can be gotten by dissolving 8-lbs. of bichromate of potash and 1-oz. of Lewis lye in 1½-gal. of boiling water. Let this stand from four to six hours, then add enough denatured alcohol to make 4-gal. of fluid. After this is done, cut 2-oz. of logwood extract in 1-pt. of alcohol and add this to your solution.

If a deeper color is wanted, stain twice. Let your wood stand over night. A longer time will not harm it. Then sandpaper until the lights are clear, stain over with any walnut oil stain and wipe off with a cloth. The next day fill with a black filler.

Another shade can be secured by dissolving one part of potassium permanganate of potash to thirty parts of water. Stain your wood twice in succession. After about five minutes wash over with clean water. After it is thoroughly dry, stain over with a solution of iron acetate. Go over this lightly. That will bring out all the dark shades and lines prominently. Then fill the same as directed for the other wood.

A good, cheap oil stain can be made by mixing 1-gal. Egyptian asphaltum, 1-gal. benzine, 1-qt. benzol and 1-qt. turpentine. Then fill in about one hour, or before it is too dry on the lights.

To make a good oak filler, use about 35-lbs. of white paste filler, 1-qt. boiled linseed oil, 4-lbs. of black and 1-lb. of vandyke brown. Then add enough benzine to make 5-gal. of filler. If you prefer the light a little on the greenish tone, add ½-lb. nigers cone.

Silver-gray is fast gaining favor in mission styles, so I will add this formula, which is very simple. Use ¼-lb. of copperas and ¼-lb. of powdered nut galls. Dissolve this in 1-qt. of hot water, then add enough cold water to make 2-gal. of fluid. Do not use a tin or iron vessel. Use a crock.

If the oak is of a poor grade, add a little glycerine, as it will help to keep the grain down. Then sandpaper, after which give a thin coat of shellac and fill with filler made of white lead and very thin turpentine. Wipe off across the grain before it is dry, so as to get as much white lead as possible into the pores.—G. Peterson, in Veneers.

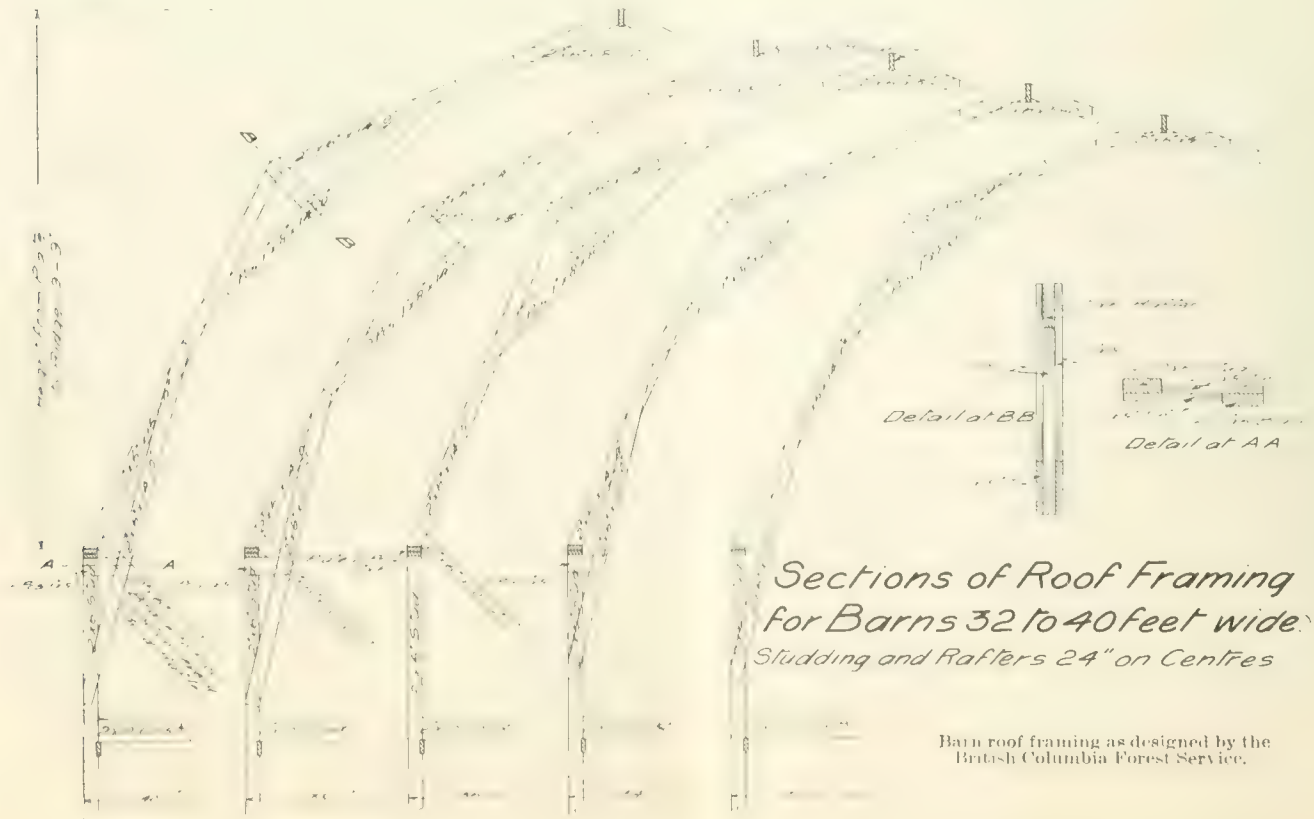
Roof Framing

The accompanying line drawing illustrates roof framing suitable for barns from 32 feet to 40 feet wide, prepared by the British Columbia Forest Branch. The roofs shown are economical in material, simple in construction and strong, and supporting posts are unnecessary, thus allowing a clear storage space in the haymow.

The illustrations give the lengths and sizes of the various roof timbers. It will be noticed that no timber is longer than 16 feet, or of greater size than 2 in. by 6 in. (except the short 2 in. by 8 in. struts).

One complete set of timbers for the roof should first be laid out on the hayloft floor, and all joints very carefully marked and cut. This complete set should then be used as a pattern for all the other roof timbers, which should be cut and stacked in piles before any are erected. In cutting off lengths of rafters, etc., in order to have all lengths accurate, always work to the pattern and not to the last piece cut.

The best way to find out how many different wooden articles can be made from cutting waste is to go to looking for them and keep looking.



Barn roof framing as designed by the British Columbia Forest Service.

Why a Saw Cuts*

This seems a simple question, but really there is more depth to it than appears at first thought.

For instance, why cannot a board be cut or divided by a blade with a knife edge when used in the same manner as a saw? Of course, it is understood that it will sever exceedingly thin stock, but when it comes to a board of ordinary thickness, the knife edge will merely "score" to a certain depth depending upon the length of bevel or its acuteness, for the thicker portion of the beveled edge coming in contact with the sides of the scoring prevents the blade from entering further and causes it to simply glide along. Then again, if additional pressure is applied in the effort to force the cutting edge down to its work, the friction becomes so great that the blade will be jammed or wedged in the board.

This is mentioned for the reason that it has some bearing not only on the action of the saw in cutting, as will be referred to later, but to show there must be a sufficient displacement of wood to allow the blade to enter so its cutting edge may continuously reach and cut more of the wood, and also to prevent side friction and binding.

Cutting Action of a Chisel and Its Relation to Saw Cutting

The nearest approach to the cutting action of a saw, particularly in ripping lumber, is the action of the chisel, though this latter instead of cutting out small pieces of wood similar to sawdust, separates and removes a long shaving by what may appropriately be termed "paring or slitting," for while its comparatively broad, sharp edge separates the fibres of wood (contrary however to the manner of the saw tooth) lengthwise with the grain, it does not cut on the sides, as the wedge-shaped end merely raises the shaving or chip, thus parting or tearing the fibre on the sides as the chisel is pushed along. The angle at which the chisel is held to the work, the amount of bevel on cutting edge, the force or pressure exerted and the degree of softness or hardness of stock being cut, these are the factors which govern the thickness of shaving that can continuously be made.

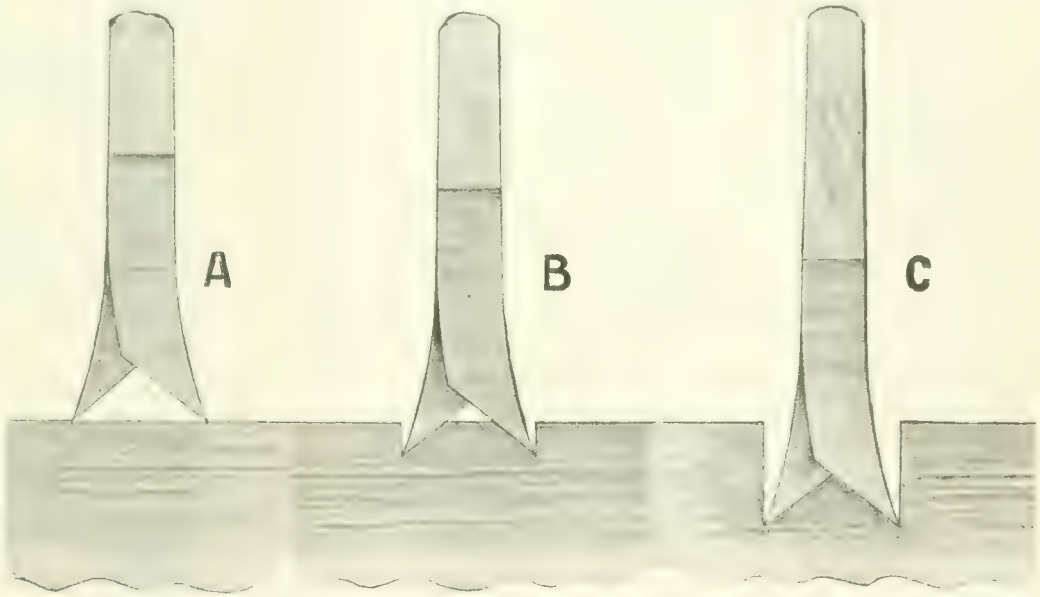
In all these latter respects the working of the chisel bears a close relationship to the operation of saw teeth as controlled by their angle and bevel and, similar to the saw, the chisel cuts a groove or kerf by separating and removing the material in contra-distinction to the blade with a long knife edge.

Generally speaking, the actions of both the knife and the chisel are employed in the cutting done by a saw, which removes successive portions of material by "cutting and tearing," not in the shape of long shavings but in small particles commonly termed sawdust.

While this combination applies especially to the crosscutting saw, it also follows in a measure with the ripping saw, though the tooth edge of the latter may more aptly be termed a series of chisels. Considering the hand saw as fitted up for sawing across the grain, or crosscutting it, possesses practically V-shaped teeth, the points set or bent over slightly for clearance of the body of the blade in the kerf: one point bent to the right, the next to the left, and so on alternately, and though the front and back of each tooth are beveled, it is the outside edge of the front of point (the portion "set,") that does the cutting.

Action of Cross-Cutting Saw

For the purpose of experimenting, given a crosscutting hand saw, properly set and sharpened, each tooth being uniform in size, shape, set and bevel, if an extremely light, short cut is made with this saw across a smooth piece of lumber it will be seen that the extreme points on both sides of cutting edge first make parallel scorings, the width of the set, similar to the



A Scoring, B entering deeper and deeper until C the full bite is taken. Owing to the small size of the teeth in hand saws, their real shape and action cannot properly be seen or understood. These enlarged views, with the description, therefore, will cause a realization of the actual science involved and carry a higher appreciation of the efficiency of well made saws.

to put a revolving top on the chimney. The thickness of the concrete from the flue surface to the outside of the chimney and between flues should action the cutting edge on outside front of points, the forward motion of the blade causing the points and cutting edges to strike the fibre at right angle to its length, severing it from the main body on each side of the blade and paring the ridge of wood between the scorings, while a continuation of the thrust pressure carries the teeth in further and further until the full "bite" is taken; the points continuously scoring on the stroke, their outside edge paring and the beveled front edge of each tooth in the cut, now in position, performing its duty, chisel-like, of crumbling up and dislodging the upper portion of the ridge of wood left between the cutters, the pieces being pocketed and carried out of the kerf, by the throats or gullets at each thrust of the saw, until finally the board is completely cut or divided. (See illustration.)

Cutting of a Rip Saw

The ripping of lumber, that is, cutting or splitting it

*From an article by F. M. Bassler, copyrighted and published by permission of Henry Disston & Sons, Box 1537, Philadelphia.

lengthwise with the grain, requires different action on the part of the saw tooth from that of crosscutting, consequently the rip tooth possesses an individual form.

While a saw fitted up for crosscutting can more easily rip lumber than a rip saw will crosscut, nevertheless, it would be slow and arduous work, for the form of tooth in a crosscutting saw does not properly sever the fibres in ripping by reason of the line of cutting edge running lengthwise with the fibre instead of across it, consequently the saw cannot cut freely nor entirely clear itself in the kerf.

The rip saw tooth has a straight front and its cutting edge strikes at about right angle to the fibre of the wood, but severs it at one place only, the front of the tooth wedging out the piece of wood.

This may be better understood when direct comparison is made with the crosscutting tooth, which, as previously noted, scores with its point and cuts with the knife edge, at an angle, on the outside of its front, whereas the rip tooth, with its straight front and cutting edge extending across the top, strikes downward, at an angle of about 45 degrees, the comparatively wide cutting edge severing across the long fibres of the wood, entering deeper and deeper, its wedge-like body pressing against the partly severed piece of wood until, unable to withstand the strain, the fibres on the sides and bottom of the small section split and separate. Piece after piece, by each successive tooth cutting its portion of half the width of kerf, is thus separated from the main body and carried out by the gullets of the teeth at each thrust of the saw, which, in this manner, practically chisels out the kerf in small sections, leading to a complete division of the board or piece of lumber.

While there is a channel or groove running down the centre of cutting edge of the crosscutting saw, formed by the bevel of point and the set, such is not the case with the rip saw, for on glancing down the cutting edge of the latter the square tops seem to form a chisel edge extending entirely across and slightly beyond each side of the blade, the inside edge of the tooth on the right and that on the left apparently meeting on a line at the centre.

It is a common supposition that the entire tooth cuts, though as a matter of fact the actual cutting is done only by the points which can enter the wood no deeper than the central channel, that is, where the inside angle of the tooth on the right lines with that of the tooth on the left. This applies to the crosscutting saw and also, with the exception of the channel, to the ripping saw, the depth of cut or bite by the latter being controlled or limited by the wide, sharp edge and the angles of the body of tooth.

The cutting section of each tooth, owing to their being set alternately to the right and left, individually severs but half the width of the kerf, and this division of duty by the numerous teeth in a hand saw enables the performance of quicker work with much less effort, or power to drive, than if the full width of kerf was cut by each tooth.

From the foregoing, it will be seen that a saw whether rip or crosscut, performs its duty by each of its teeth making an incision, at short intervals, across the long fibre of the wood, and then plowing out, in small pieces the part thus separated, the saw entering further and further with each thrust, the kerf or groove becoming deeper and deeper until finally a complete division or separation is made.

Construction Work to Attract Birds

Builders or carpenters who are called upon to provide for homes of birds will find the following information of interest. It is possible that carpenters could "dig up" considerable business in making bird houses when other business is slack.

Birds about the home add a touch of nature that can only be appreciated by those who have succeeded in attracting them. They may be gathered about in all seasons of the year with ease and certainty, merely by offering what they desire. In summer they do not require to be fed, but they do appreciate fresh water for bathing and drinking. A shallow pool, of varying

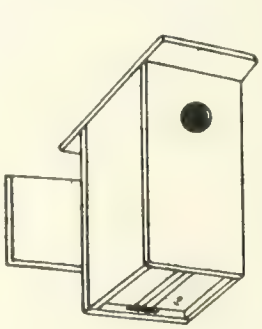


Fig. 1.

Fig. 2.

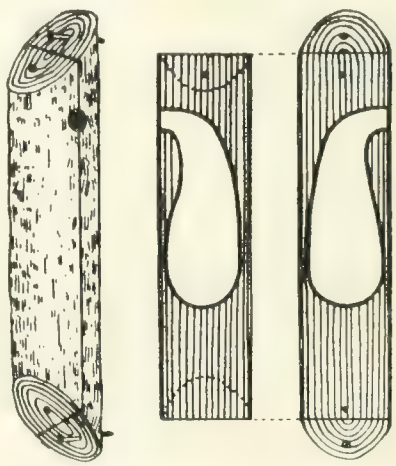


Fig. 3.—Designs of bird houses.

depth, if only a foot across, becomes on hot days a centre of attraction. A pan, with stones in it, set in the ground and kept filled with water, will provide this attraction for the birds.

Nesting boxes also furnish an inducement for the birds to visit us. Many species of birds now accept the hospitality of these boxes for the safe rearing of their young, and will occupy them year after year.

Simple forms of nesting boxes are shown herewith. Figures 1 and 2 show boxes constructed of boards, while that in figure 3 is made from a log about 6 inches thick, split in half, and gouged out to form a cavity. The two pieces are then screwed together. It is necessary to have either top or bottom removable for cleaning out old nests. The boxes should always be placed with the front protected from prevailing winds, and the opening should be about 1⅛ inches for the chickadee, 1½ inches for the swallow or wren, 2 inches for the woodpecker, fly-catcher or flicker, and 3 inches for the screech owl; in each case the opening should be near the top.

Much pleasure may be secured and greater interest in nature study created by such little encouragements to the wild birds.

News of the Builders' Exchanges

The Montreal Builders' Exchange have made a request to be represented on the Board of the Montreal Technical School.

Under the terms of a new by law, Howard Ferguson has been appointed building inspector at Trail, B.C., and applications for permits for repairs, alterations, or new structures of any kind, must in future be referred to him.

A by-law will shortly go into effect in Westmount, Que., authorizing the formation of an architectural commission to supervise the outside design and construction of buildings, public and private.

Commissioner Yorath, of Saskatoon, Sask., recently delivered a very instructive and interesting address before the members of the Saskatoon Builders' Exchange on the City's affairs recently. At the conclusion of the meeting they passed a resolution favoring the erection of an incinerator, stores and yards on some central site to cost $100,000, and Mr. Yorath was congratulated on his handling of the city's finances, and a vote of confidence in him was passed. Arrangements were made for the annual meeting and banquet.

Members of the Montreal Builders' Exchange on April 11 paid a visit to the Forests' Products Laboratories, University Street, Montreal. They inspected various departments, including those for the testing for strength of lumber and for the creosoting of lumber.

Mr. George Pounder has been elected President of the Builders' Exchange of the City of Stratford and County of Perth, Ont.

The Regina Builders' Exchange at a meeting at which all the employers were present, passed a unanimous resolution not to accede to the demand of the Bricklayers' Union, to the effect that the hours of labor be 9 hours per day, except on Saturdays, when work would cease at 1 p.m., and that the rate be 75c per hour. The Exchange is of the opinion that conditions in the building trade do not at present warrant any alteration in labor conditions which are likely to increase the cost of production.

J. R. Booth's Birthday

Mr. J. R. Booth, the veteran lumberman of Ottawa and Hull, has just celebrated his ninetieth birthday. Despite the fact that he is now twenty years past the allotted three score years and ten of the Psalmist, Mr. Booth continues to take a very active interest in all his company's interests. He was born in Shefford County, P.Q., and as a young man went to the United States, where he worked on railroads and in various lumbering camps. Ten years before Confederation he moved to what was then Bytown, a little lumbering village on the outskirts of civilization, and commenced in a very small way to manufacture lumber. Later he built the Canada Atlantic Railway between Ottawa and the United States border, in order to provide an outlet for his products. To-day John R. Booth is the largest owner of timber limits in the Dominion, and one of the most extensive manufacturers of lumber, pulp and paper, and other wood products.

British Columbia Fire Escape Regulations

In a report made by Inspector Jarrett, Building Inspector of Vancouver, giving lists of buildings not complying with the fire escape by-law, he pointed out that until March 1, 1913, straight ladder escapes only were necessary. In 1913 he had urged Mr. Bowser to amend the Provincial Act to make it compulsory to have exits from buildings to a fire escape balcony from halls or corridors and not through private rooms, but when the Act was amended his recommendations had not been accepted as far as making it compulsory, but the provision was made that exits should be through halls or corridors when possible. In that year the Act was amended so that fire escapes had to be of the return metal escape patterns. It also provided that where an exit to an escape was through a room, the door of that room had to be kept unlocked. In 1914 the Act was further amended to include departmental stores, but the Act has always named the fire chief as the proper official to take action against anyone not complying with the law in this regard. Mr. Jarrett felt that a certificate should be issued before a building was allowed to be occupied.

After discussing the report, the fire and police committees of Vancouver passed a resolution which called upon the owners of buildings in Vancouver, which at present are not equipped with fire escapes, and which come under the fire escapes regulations, to so equip their buildings or face the penalty. This order does not apply to owners of unoccupied buildings.

The Portland Cement Association

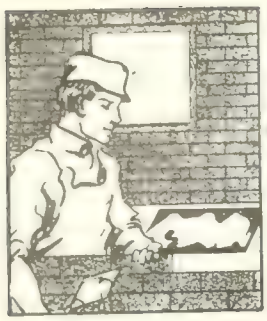
By amendment to the Constitution of the organization so long known as the Association of American Portland Cement Manufacturers, this organization will henceforth be known as the Portland Cement Association. Headquarters offices are in the Conway Building, 111 West Washington Street, Chicago.

Book on Saws

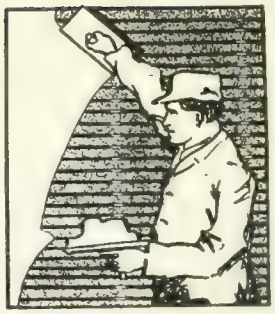
A twelve-page book on saws has been issued by Henry Disston & Sons, Box 1537, Philadelphia, who also have a factory at Toronto, illustrating the construction of saws and why they cut, and another deals with "How a Disston Saw is Made." These books give a full insight into the manufacture and use of saws. The first is specially illustrated and demonstrates that the cutting action of a saw is based on scientific principles, bringing out new and astonishing facts which few ever before realized. The second one traces the saw step by step through the factory. Either or both of these books may be had on request.

The old grindstone is still good as a knife and tool-sharpener, but there are other and livelier grinders which have extensively replaced it.

If you are using small dimensions in lumber you may find it better to buy this in clear stock cut to specific dimension, than to buy low-grade lumber and work out the defects in reducing it to dimension. It takes time and costs money to work out defects.



Brick Work and Plastering



Some Things to Know About Chimneys*

FROM a construction angle the chimney offers no difficulties to the builder. As a structural proposition, a hollow column of brick, with a terra cotta lining, either tied to a wall or free, is an open book to him. He knows that the whole business of chimney construction has been reduced to an exact science. Any handbook will give him the particular formula he wants to guide him in getting the dimensions. As a technical proposition the chimney has been given all the attention coming to it by noted authorities, from Rumford down. But a chimney is not a chimney unless it behaves itself and there are numbers of practical things to know about chimneys not found in books.

Hints by the "Chimney Doctor"

A "chimney doctor" who has spent twenty-three busy years correcting evils of chimney and fireplace construction in his Middle Western home, gave these hints to the writer and he is now passing them on. They are the results of personal experience. Generally, this "chimney doctor" says chimneys built according to standard dimensions and for average uses work satisfactorily. Stock sizes of flue linings and standardization of stove, furnace and other chimney connections contribute to this efficiency. Much of the faulty construction is to be charged to architects long on theory and short on practice. Builders, also, the doctor testifies, in trying to save material and time fall into errors which make trouble afterward and hurt their reputations.

The open fireplace chimney connection is most sinned against, says this doctor, who has treated many cases of throat trouble. Chimneys which serve stoves, furnaces, etc., don't make much trouble, even though they may be stealing a lot of the heat that ought to be radiating, but "the smoke goes up the chimney just the same" and that is the main thing. Whatever may be the builder's own views on the subject, the fact remains that the open fireplace is becoming more and more popular and the majority of new houses have them. Rooms in which they are placed become centres of family life and it is, therefore, highly important that they be well and correctly built.

The Flue Linings

One of the doctor's practical tips is that the dimensions by which flue linings are brought do not describe the area of the flue. For instance, the standard 9 x 9 flue lining does not mean a 9 x 9 flue. It means a flue as much less than that as the area of a cross-section of the flue. In terra cotta such a flue is 7 x 7 in., not 9 x 9, because the thickness of the flue lining has to be taken off. Terra cotta linings are 1 in. thick; thus 32 sq. in. have to come out of the apparent 81 sq. in. of flue and you have left a flue of 7 x 7, or 49 sq. in. Quite a difference! This means that where an unlined chimney, capable of taking a 9 x 9 flue and sufficiently capacious when unlined, to carry off the smoke from an open fireplace when lined with terra cotta, becomes altogether inadequate to do the work demanded of it.

Chimneys with 9 x 9 Flues

A great deal of this doctor's work results from the fact that builders, as they did in years gone by, build their chimneys with 9 x 9 flues. Now, however, the city's building code calls for flue linings. So these builders put 9 x 9 flues in their 9 x 9 chimneys and they won't do the work required. Then the house owner sends for the chimney surgeon, who has to reduce the throat to correspond to the capacity of the chimney and a big fire in a big fire-place burns with a feeble flicker and little warmth. Pretty soon there are a lot of people saying that "they don't know how to build fireplaces nowadays," and the builder gets blamed.

For all fireplaces with openings up to 32 in., the doctor says, flue linings of 9 x 13 in. should be used. This will insure sufficient draft to carry the smoke and gases up the chimney. If a round lining should be used the inside area should be approximately the same in square inches. Above 30 or 32 in., referring to fireplace openings, he says, the 13 x 13-in. terra cotta linings should be used for ordinary work. This is for fireplaces with openings up to 42 in. For undertakings with larger openings, the builder generally would be following architects's specifications, and the responsibility will rest primarily on the architect, though it would be well for the builder to check these plans because he will have to bear as much of the onus for a fireplace that "smokes" as will the architect.

Position of Rectangular Flue Lining

Another wrinkle is also suggested by the doctor, who says that when a rectangular flue lining, greater in one dimension than in another, is used, the wide side should lie against the chimney breast. For instance, if the lining were to be 9 x 13 in., it should lie with the 13-in. side parallel with the greater width of the mantel and the 9-in. dimension should extend across the wall in which the chimney is built. The principal reason for this disposition of the flue is the effect it will have on the appearance of the flame in the open fireplace. If the 9-in. width should parallel the firebox, the flame would be contracted as it rose above the fuel; while if the extended opening were provided the flame would spread as it rose and look more as a flame ought to look.

"Make the opening from the fireplace correspond in square inches to the opening at the top of the chimney," is the way the expert referred to states the proposition in everyday figures. That is what he does when he

*By G. D. Crain Jr., in Building Age

doctors unsuccessful fireplaces. It is a matter of correct adjustment of the firebacks and the shelves at the bottom of the flues, of dampers, sidewalls, etc. Often he finds grates with mouths much too extended. Result: smoky fireplaces and disappointed owners. Another frequent evil this doctor also finds is flues unduly contracted inside the walls, as in cases where these flues are being conducted from fireplaces on both sides of thin walls to flues which rise side by side.

Flues Unduly Contracted

One typical job of this kind occurred in a new house in which were two fireplaces, on opposite sides of a 12-in. wall, both of which smoked when fires were built in them. Both were apparently well constructed; the chimney tops were as they should have been. The trouble was internal. "I took one mantel away; tore out one fireplace and found what I expected," said the expert. "In order to save brick and space in both rooms the architect and builder had tried to crowd both flues into the same 12-in. wall. At the tops of each of the firebacks the throats of the chimneys both sloped backwards necessarily, but before they could be deflected laterally to the line of their respective flues they clashed. At these points, where the throats had been rectangular, they were divided by one row of brick into triangular passages with the result that each flue was reduced to one-half of the dimensions it should have had. Of course they smoked."

So the expert built an arch from the floor level to the tops of the firebacks. Then one thickness of firebrick was set up for the back of each grate and the sloping firebacks were both set on this single course. Above, where the flues contested for space, they were divided by a single course of brick set edgewise—making a partition 2 in. thick, instead of 4, as had been the case, while the gain in condensing the wall between the fireplaces enabled the builder to overcome the lateral deflection in a degree. This cost money, as the expert observed, and was at best flimsy construction, though it gave the house owner fireplaces that would work. If the builder had refused to let himself be persuaded to do what he knew could not be done, he would have saved himself and the architect a black eye apiece.

Elaborate Fireplace with Small Flue

This same expert spoke of numbers of similar instances, referring to an elaborate fireplace in a fine big house, with a costly mantel of Caen stone, wonderfully carved, etc. The fireplace opening is 42 in. and the architect has given that fireplace only a 9 x 9 in. flue which, besides being utterly inadequate, makes two sharp turns in a short space, in order to give the architect what he wanted on the other side of the wall. One thing is sure about this fireplace, the expert declared. The first time the owners of this mansion build any considerable fire in it they will have a royal big smoke out. Then they will have to tear out the whole side of the room and reconstruct or put in two or three little gas logs and make them answer for their wood fire.

Another thing for the builder to consider is that enough air must be provided to make the draft. The tendency of modern building is to weather strip until not a breath of air can enter. This is excellent inasmuch as it enables the occupants to control means of ventilation, but unless these means are provided, look out for smoky fireplaces. Without it there is no column of cold air to boost the warm air in the chimney. When, as is sometimes the case, it is necessary for the householder to let a certain window down 1 in. from the top in order to keep a fireplace going satisfactorily, either the architect or the builder has slipped up.

Like man, who cannot live to himself alone, chimneys cannot draw to themselves alone. They must be considered in relation to their neighbors. Every builder knows of those which suck as well as those which have too much draft. Their tops should, generally speaking, be on the same level as the tops of those which surrounded them, or they should be equipped with wind caps, or both. And there are various good things to know about chimneys and fireplaces as to fire prevention. That this is an item worthy of careful study is proven by the large number of fires which are charged to defective flues. The hearth-box is another source of trouble.

"The fireplace for the coal fire, which is elevated in a grate, is safe with a shallower box than the wood-burning fireplace," the expert points out. "This is because the wood fire is burned right on the floor of the fireplace while the coal fire burns on an elevation and there is a non-conducting pan of ashes between it and the floor."

The Shallow Fire Box

And when the chimney builder lets the general contractor dictate a shallow fire box that the builder knows is not safe, he can be sure that the insurance underwriters and the building inspectors will "burn him up" when they investigate the cause of the fire that will be inevitable. When the investigators say to the builder: "You certainly knew that the fireplace was not safe" there is no answer for the builder to make, and he gets another black eye.

These suggestions are only the beginning of what the builder can find out for himself about chimneys and fireplaces. No builder can know too much about them and text books are available on all sides. Modern building codes often show an excess of caution, but there will often be builders of houses who want that degree of caution taken in their work. The more the builder knows about chimneys the greater will his field be extended.

Milton Pressed Brick Co., Incorporated

The Milton Pressed Brick Company, of Milton, has been incorporated at a capital of $1,500,000 and has absorbed the plants of the Toronto Pressed Brick Company, and the Medina Shale Brick Company, Streetsville.

The plant of the Milton Pressed Brick Company, consists of 300 acres, and the factory has 8 brick machines with an output of 200,000 brick per day, a rough texture machine with an output of 40,000 brick per day, 16 down draft kilns and a ten tunnel dryer. The equipment of the Toronto Pressed Brick Company includes five presses and eight kilns, while that of the Medina Shale Brick Co. consists of two machines and three down draft kilns.

The officers of the company are John S. McCannell, President, and Frank R. McCannell, Vice-President. The other directors are J. P. Stillwaugh, who will have charge of the Streetsville plant; J. McBain, who will have charge of the Toronto office, and W. D. Lummis C. B. Lewis will have charge of the Toronto Pressed Brick plant at Milton.

Modern Store Fronts

Their Design and Construction

Kawneer Manufacturing Co., Limited
Guelph, Ontario

HIS DEPARTMENT is designed to be of the greatest practical benefit to contractors and builders. Special information on any subject ertaining to the design or construction of store fronts will be gladly furnished. You should have a copy of the Kawneer illustrated ooklet on modern store fronts, which is sent free to any architect, contractor or builder who writes for same.
nder this heading, every month, will appear a typical elevation of a modern store front, and a sheet of half size details of Kawneer construction.

YPE N° 10 TYPICAL ELEVATION OF JEWELRY STORE

COPYRIGHTED BY KAWNEER MFG. CO.

BOVE design shows a typical elevation of a jewelry store. The principal features are the comparatively low display ndows, high bulkhead, and shallow display deck.

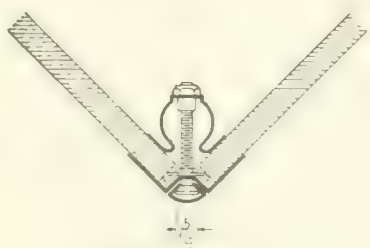
w windows because jewelry are small objects and would look t in windows with high plates.

gh bulkhead because the delicate designs of jewelry must be ought up as high as possible for careful inspection.

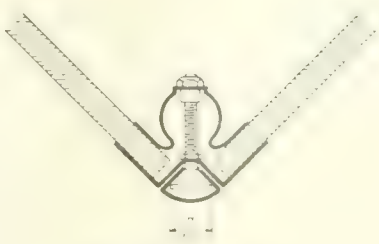
allow display deck because several rows of jewelry can not be played effectively.

The Kawneer Manufacturing Company Limited, will show different "up-to-date" KAWNEER STORE FRONT designs, for various types of business, such as Jewelry, Candy, Clothing, Millinery, etc.

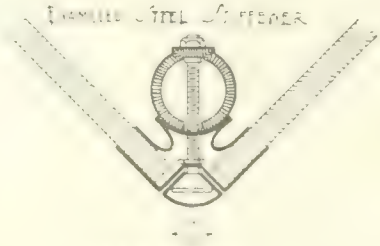
The details on the opposite page, drawn half full size, show some of the members which constitute KAWNEER STORE FRONTS. Readers are asked to cut these out, as they will prove to be a valuable reference asset to them in the future.



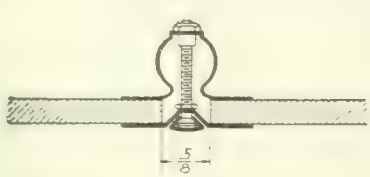
CB-3 B-Light



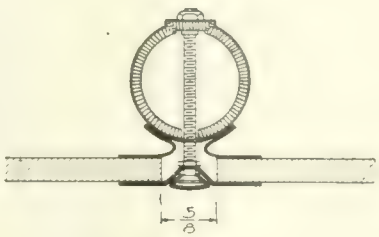
CB-4 B-Medium



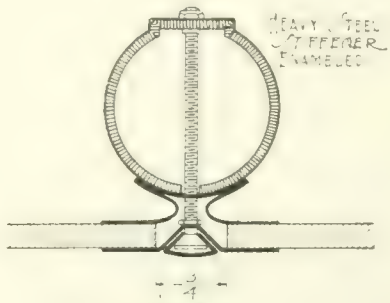
CB-5 B-Heavy



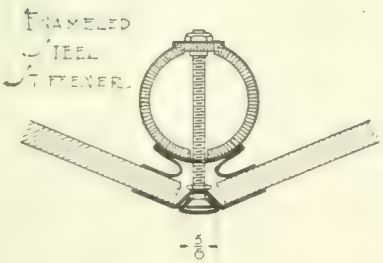
DB 11 B-Light



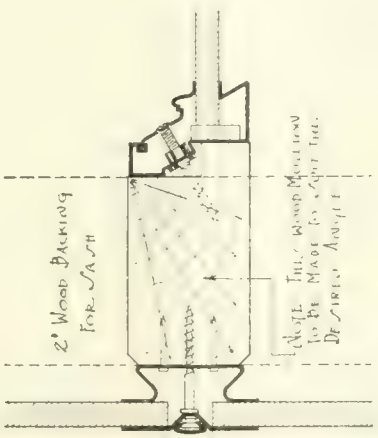
DB 12 B-Medium



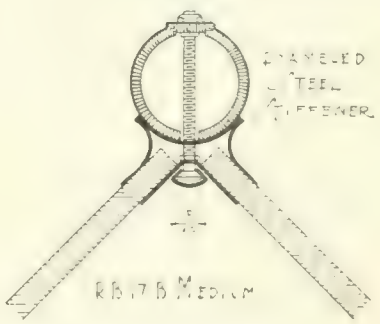
DB 13 B-Heavy



CB 7 B-Medium

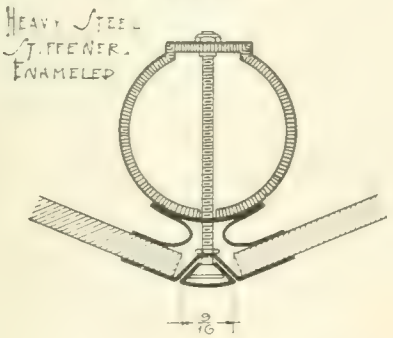


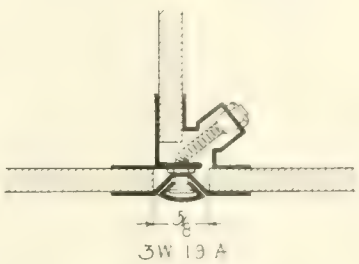
3W 19 B-



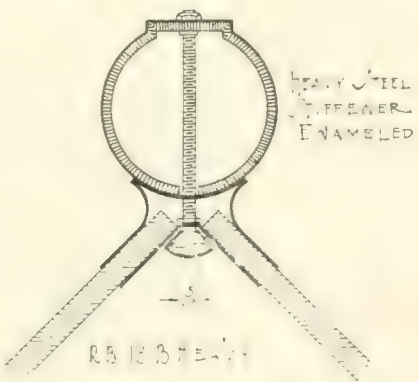
RB 17 B Medium

CB 8 B Heavy



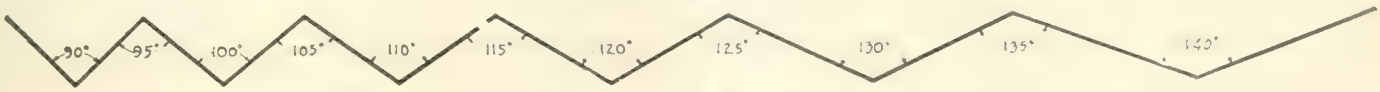


3W 19 A



RB 18 B Heavy

Various Degrees of Angles



This Chart of Angles will assist our Patrons to select proper Degrees when ordering Corner Bars

PLATE No. 1 KAWNEER MFG. CO. LIMITED. GUELPH, ONT.
MANUFACTURERS OF KAWNEER PATENT [illegible]
Kawneer STORE FRONTS

Price List of Building Materials—Revised to Date

EDITOR'S NOTE—Great care is exercised in obtaining prices for this department. They are as accurate as it is possible for us to make them. We know, however, that because of varying conditions, different dealers' prices are bound to vary somewhat; and our purpose in publishing this department is to give readers an idea of prices, rather than absolutely definite information.

PRICE AT MONTREAL

Hemlock Lumber

2 x 4 in. to 2 x 12 in., 8 to 14 ft.	$24.00
2 x 4 in. to 2 x 12 in., 16 ft.	26.00
2 x 4 in. to 2 x 12 in., 18 ft.	28.00 to 30.00
1 in. hemlock No. 1	22.00
No. 1 hemlock decking	23.00 to 25.00
No. 2 hemlock dimensions and 1 in.	26.00 to 30.00

Pine

1 in. common and better pine 8 to 12 in. wide, rough	$32.00 to 40.00
2 in. white pine, mill stock	29.00 to 33.00
⅞ x 8 and 10 in. pine shelving	36.00 to 45.00
⅞ x 12 pine shelving	42.00 to 50.00
No. 1 white pine flooring	40.00
No. 1 spruce flooring	30.00
No. 1 pine decking, D2S	40.00
No. 1 pine V. or beaded sheeting	40.00
No. 2 pine V. or beaded sheeting	30.00

Pine Trim for Paint Finish

4 in. casing, per 100 ft.	$1.75
5 in. casing, per 100 ft.	2.10
8 in. pine base, per 100 ft.	3.25
10 in. pine base, per 100 ft.	4.20
4 in. pine window stool, per 100 ft.	2.75

Shingles, Lath, Roofing, Etc.

No. 1 pine lath	5.00
No. 2 pine lath	4.50
No. 1 spruce lath	4.00

Cedar Posts—Fence

5 in. at small end	5c. foot
7 in. at small end	7c. foot

Hardware

Nails, wire, common	$3.70 base keg
Nails, cut, common	3.20 " "
Sash weights, cast iron	1.90 per 100 lbs.
Tarred felt paper	.43 roll
Building paper	.35 roll

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	17.00
No. 1 dry pressed buff bricks	21.00
Red stock bricks	11.50
Grey stock bricks	12.00
Wire cut brick for foundation work	10.00
Fire brick	25.00
Sewer pipe, 4 inch	10c. foot
Sewer pipe, 6 inch	15c. foot

Cement, Plaster, Stone, Etc.

Cement (bags extra)	1.90 bbl.
Sand, for cement or brick work	.95 ton
Lime	.38 per 100 lbs
Hydrated lime	10.00
Mortar color	6.50 bbl.
Plaster of paris	3.75 "
Crushed stone, 2 in.	1.40
Crushed stone, 1 in.	1.60
Crushed stone, ⅝ in.	1.75
Hardwall plaster	$6.50 per ton
Gravel	1.35 yard
Hair (plaster)	.03 per lb.

PRICE AT TORONTO

Hemlock Lumber (Sized)

2 x 4 in. to 2 x 12 in., 8 to 14 ft.	$24.00
2 x 4 in. to 2 x 12 in., 16 ft.	24.00
2 x 4 in. to 2 x 12 in., 18 ft.	28.00
1 in. hemlock, No. 1, 6 in. wide.	24.00
No. 1 hemlock decking	26.00
No. 2 hemlock dimensions and 1 in.	19.00

Pine

1 in. common and better pine 8 to 12 in. wide, rough	$25.00 to 33.00
2 in. white pine, mill run	29.00 to 34.00
⅞ x 8 and 10 in., pine shelving	33.00 to 40.00
⅞ x 12 pine shelving	45.00 to 48.00
No. 1 white pine flooring	33.00
No. 1 spruce flooring	27.00
No. 1 pine decking, D2S	28.00
Spruce decking	27.00
No. 1 pine V. or beaded sheeting	35.00
No. 2 pine V. or beaded sheeting	32.00

No. 1 Common Long Leaf Yellow Pine

2 x 4 in. to 2 x 14 in., 10 to 16 ft.	$31.00 to 43.00
2 x 4 in. to 2 x 14 in., 18 to 20 ft.	33.00 to 45.00
2 x 4 in. to 2 x 14 in., 22 to 24 ft.	35.00 to 47.00

Yellow Pine Finish

4/4 x 6, 8, 10 and 12 B. & B. smoke dried	$45.00
5/4 x " " " "	52.00
6/4 x " " " "	52.00
8/4 x " " " "	60.00
4/4 x " " " steam dried	48.00 to 52.00
5/4 x " " " "	50.00 to 55.00
6/4 x " " " "	50.00 to 55.00
8/4 x " " " "	60.00 to 65.00

Pine Trim for Paint Finish

4 in. casing, per 100 ft.	$1.75 to 2.00
5 in. casing, per 100 ft.	2.00 to 2.50
8 in. pine base, per 100 ft.	2.75 to 3.25
10 in. pine base, per 100 ft.	3.80 to 4.50
4 in. pine window stool, per 100 ft.	3.00

Hardwood Trim, Flooring, Etc.

Quotations will be given on request.
See editor's note above.

Shingles, Lath, Roofing Etc.

XXX B. C. cedar shingles	$3.50 per M
N. B. extras	4.00
No. 1 pine lath	5.00 to 6.25 per M
No. 2 pine lath	4.75 to 5.25
No. 1 spruce lath	4.25
Roofing	1 ply—$1.60 per sq.
	2 ply— 2.25 "
	3 ply— 2.50 "

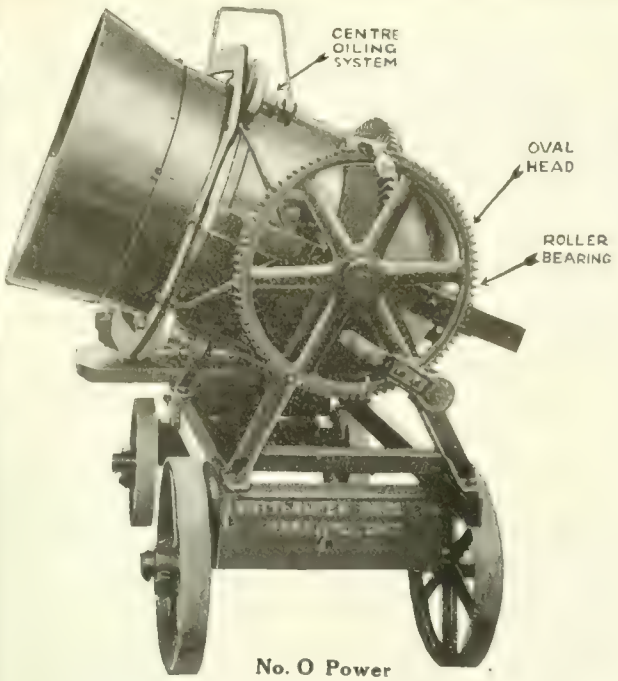
Cedar Posts—Fence

5 in. at small end	.25 each
7 in. at small end	.50 each

Hardware

Nails, wire, common	$3. 65cwt.
Nails, cut, common	3.20
Sash weights, cast iron	2.00
Tarred paper	.60 roll
Building paper, plain	.50

NOTE TO READERS. We would be glad to have suggestions from readers as to the extension or modification of this list.



No. O Power

Mr. Contractor, have you a

WETTLAUFER HEART-SHAPE MIXER

on your job? If not, secure yourself one and watch your results. Your repair bill will diminish and you will produce a better job in shorter time.

In our Famous No. 0 Power Mixer you have the latest Combination 1916 Model, which discharges from either side. Mixes your lime and cement mortar, as well as your concrete. Light, durable, and a perfect wonder. Write for our Special Offers.

All our Machines are made in Canada by a Canadian Firm with Canadian Capital.

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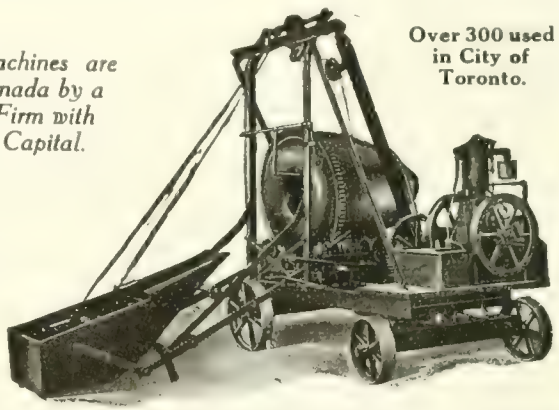

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THE HALLIDAY COMPANY LIMITED

HAMILTON *Factory Distributers* CANADA

Price List of Building Materials—*Continued*

Price at Toronto—*Continued*

Glass	Star	D.D.
Up 25 (per 100-ft. box)	$7.80	11.90
[illegible]	8.15	12.85
[illegible]	8.50	13.60
41-50	11.75	15.50
51-60	12.25	15.85
61-70	13.10	16.80
[illegible]	14.75	18.35
[illegible]		22.75
85-90		24.35
[illegible]		25.00
[illegible]		29.00
101-105		32.00
[illegible]		37.00

Less 30 p.c. F.O.B., Toronto.
Less 25 and 5 p.c., Montreal.

Wired glass	16c per sq. ft. less 10 p.c.

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	$14.00 to 18.00 pr M
No. 1 dry pressed buff bricks	14.50 to 18.00
Red stock bricks	10.00 to 12.50
Sand lime bricks	8.50
Grey stock bricks	10.50 to 12.50
Sewer bricks	8.75 to 9.50
Wire cut brick for foundation work	8.00 to 9.00
Porous terra cotta bricks	12.00 to 15.00
No. 1 enamelled bricks, all colors, from	80.00 to 150.00
Fire brick	26.00 to 30.00
Rough texture brick	15.00 to 17.00
Sewer pipe, 4 inch	10c. foot
Sewer pipe, 6 inch	16c. foot
Verandah post caps, 16 in.	1.45 each
Verandah post caps, 20 in.	1.75 "
Chimney caps, 1 flue in 1 piece	2.00 "
Chimney caps, 2 flues in 2 pieces	3.50 "
Chimney caps, 3 flues in 3 pieces	5.00 "

Cement, Plaster, Stone, Etc.

Cement (bags extra)	$1.85 bbl. (1.55 in car lots)
Sand, for cement or brick work	1.20 a yard
Lime	.38 cwt.
Hydrated lime (Canadian)	10.60 ton
Hydrated lime (American)	15.00 "
Mortar color	black, 6½; red, 2
Plaster of paris	$2.50
Crushed stone, 2 in.	1.20
Crushed stone, 1 in.	1.25
Crushed stone, ⅜ in.	1.25
Hardwall plaster	9.60 neat 4.00 to 5.00 sanded
Gravel	1.50
Hair (plaster)	.07 lb.

PRICE AT WINNIPEG

Hemlock Lumber

2 x 4 in. to 2 x 12 in., 8 to 14 ft.	$29.00
2 x 4 in. to 2 x 12 in., 16 ft.	29.00
2 x 4 in. to 2 x 12 in., 18 ft.	29.00

Shingles, Lath, Roofing, Etc.

XXX B. C. cedar shingles	$4.00 & 3.50 per M
No. 1 pine lath	5.75 per M
Metal lath	.16 to .20
Roofing felt (2-ply)	2.50 per roll

Hardware

Nails, wire, common	$4.00 per keg
Nails, cut, common	4.00
Sash weights, cast iron	2.75 cwt.
Tarred felt paper	1.00 per roll
Building paper	.75
Insulating paper	1.25

Price at Winnipeg—*Continued*

Glass	Single	Double
Up 25	$6.00	8.00
26-40	6.50	9.00
41-50	7.00	10.25
51-60	7.50	11.00
61-70	8.00	11.75
71-80	8.50	12.75
[illegible]		15.75
[illegible]		16.75
[illegible]		17.75
[illegible]		21.00
[illegible]		23.50
101-105		27.00
106-110		

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	$25.00 to 50.00
No. 1 dry pressed buff bricks	30.00 to 40.00
Red stock bricks	25.00
Sand lime brick	12.00
Porous terra cotta bricks	18.00 per M
No. 1 enamelled bricks, all colors, from	100.00
Fire brick	52.50
Oriental brick	35.00
Sewer pipe, 4-inch	.11 per ft.
Sewer pipe, 6-inch	.18½ per ft.

Cement, Plaster, Stone, Etc.

Cement (bags extra)	$2.60 per bbl.
Sand, for cement or brick work	1.85 a yard
Lime	.34 per bu.
Hydrated lime	12.00 per ton
Mortar color	.05 per lb.
Plaster of paris	.75 per bag
Crushed stone, 2 in.	2.65 per yard
Crushed stone, 1 in.	2.90
Crushed stone, ⅜ in.	2.90
Hardwall plaster	13.00 per ton
Gravel	1.85 per yard
Hair (plaster)	1.25 per bale

PRICE AT VANCOUVER

Shingles, Lath, Roofing, Etc.

XXX B. C. cedar shingles	$2.20 & 2.10 per M
No. 1 pine lath	2.35 per M

Hardware

Nails, wire, common	$3.25 per keg
Nails, cut, common	4.25
Tarred felt paper	.90 per roll
Building paper	.70

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	$42.00 per M
No. 1 dry pressed buff bricks	42.00
Red stock bricks	13.00
Fire brick	45.00
Sewer pipe, 4 inch	.25 per ft.

Cement, Plaster, Stone, Etc.

Cement (bags extra)	$3.00 per bbl.
Lime	1.35 per bbl.
Hydrated lime	4.25 per bbl.
Plaster of paris	4.50 per bbl.
Hardwall plaster	14.50 per ton
Hair (plaster)	14.50 per ton

NOTE TO READERS. We would be glad to have suggestions from readers as to the extension or modification of this list.

Advertisements that Remind You

R. Laidlaw Lumber Co., Limited

Everything in Lumber

Timbers, Sash, Doors, Columns, Etc.

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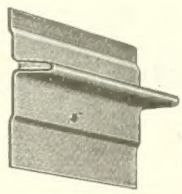

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Bank of Hamilton Building, Hamilton, Ont.

Phone 286 Live Agents Wanted

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MADE BY

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LONDON, CANADA

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Professional Directory

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Stanley Lightfoot Registered Patent Solicitor & Attorney

208 Lumsden Bld., (Yonge & Adel. Sts.) Toronto

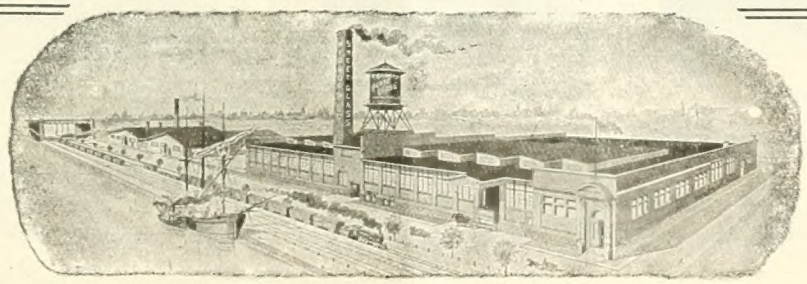
Architects

will find that it pays to have a card such as this in this directory: costs only $20 per year.

RED

S

BRAND WINDOW GLASS



GLASS BENDERS TO THE TRADE

THE TORONTO PLATE GLASS IMPORTING COMPANY, LIMITED

Plate, Window, Figured, Stained, Wired, Bent, Mirror and Ornamental Glass

DON ROADWAY TORONTO

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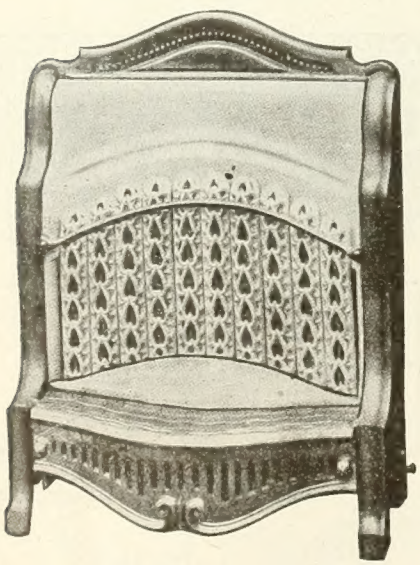


RADIANT HEAT GRATES

The kind that Supplies Pure Odorless Heat

THEY are very economical, highly decorative, and as an aid to ventilation, are recommended by many physicians.

Our booklet, "Hygienic Solution of the Residence Heating Question," conclusively proves that "For Domestic Apartments, radiant heat, supplemented by a moderate proportion of convected heat at a low temperature, is the best form of warmth." This is the class of heat given by the Parkinson Gas Fires handled by this Company. The booklet mentioned contains much interesting information about the heating question. We will be pleased to mail a copy to any one who may be interested.

We have fires at various prices from $8.00 to $26.00. We would be pleased to demonstrate them to you at our Salesrooms, and also to discuss your heating problem. If you are unable to call, phone us, or send us a post-card, and we will have one of our representatives interview you.

The Consumers' Gas Company of Toronto

12-14 Adelaide St. W. **Telephone Adel. 2180**

WEST
BATTS LIMITED
TORONTO

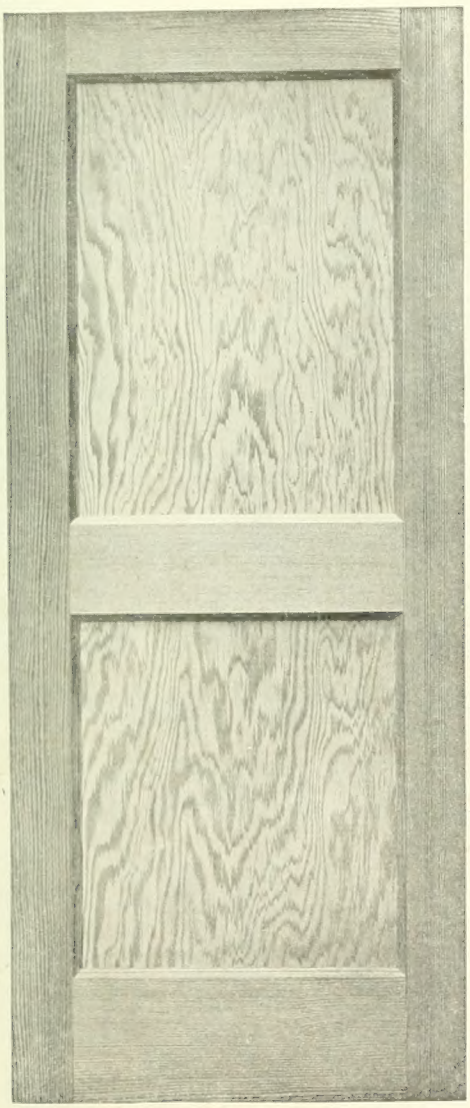
BATTS' STAVED COLUMNS

(NO. 1 WHITE PINE)

BUY GOODS "MADE IN CANADA"

(WE MANUFACTURE ALL OUR OWN GOODS)

VENEERED & PINE DOORS



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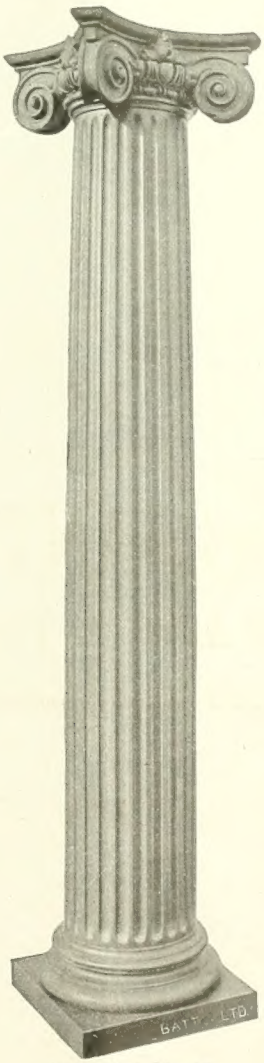

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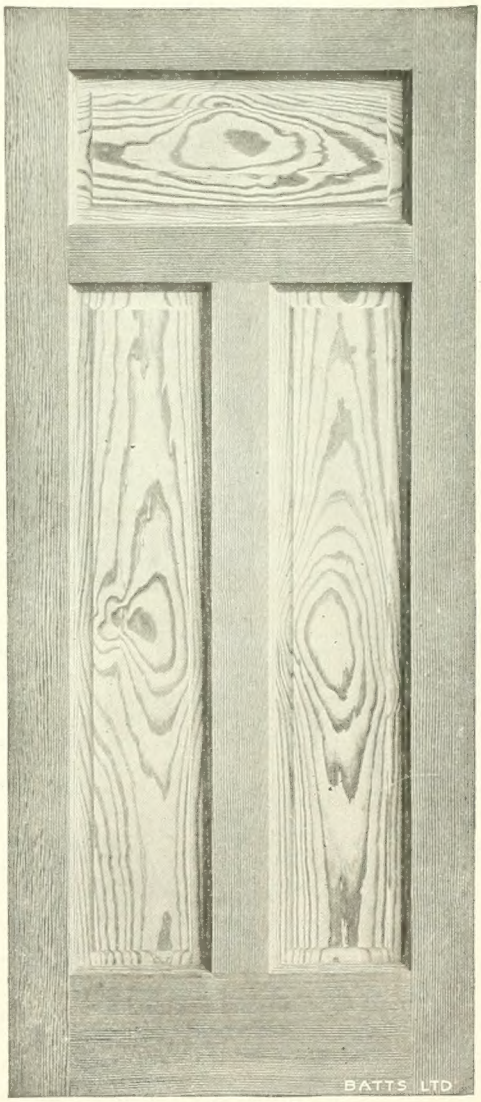


B.L. No 350, 1⅜ in. thick
Clear Edge Grain. Fir Stiles and Rails,
Georgia Pine Panels

OUR FACILITIES FOR THE EXECUTION OF ORDERS FOR DOORS AND COLUMNS TO SPECIAL DESIGN ARE SUCH THAT WE CAN SATISFACTORILY MEET ANY REQUIREMENT.

385-400 Pacific Ave. **BATTS LIMITED** West Toronto

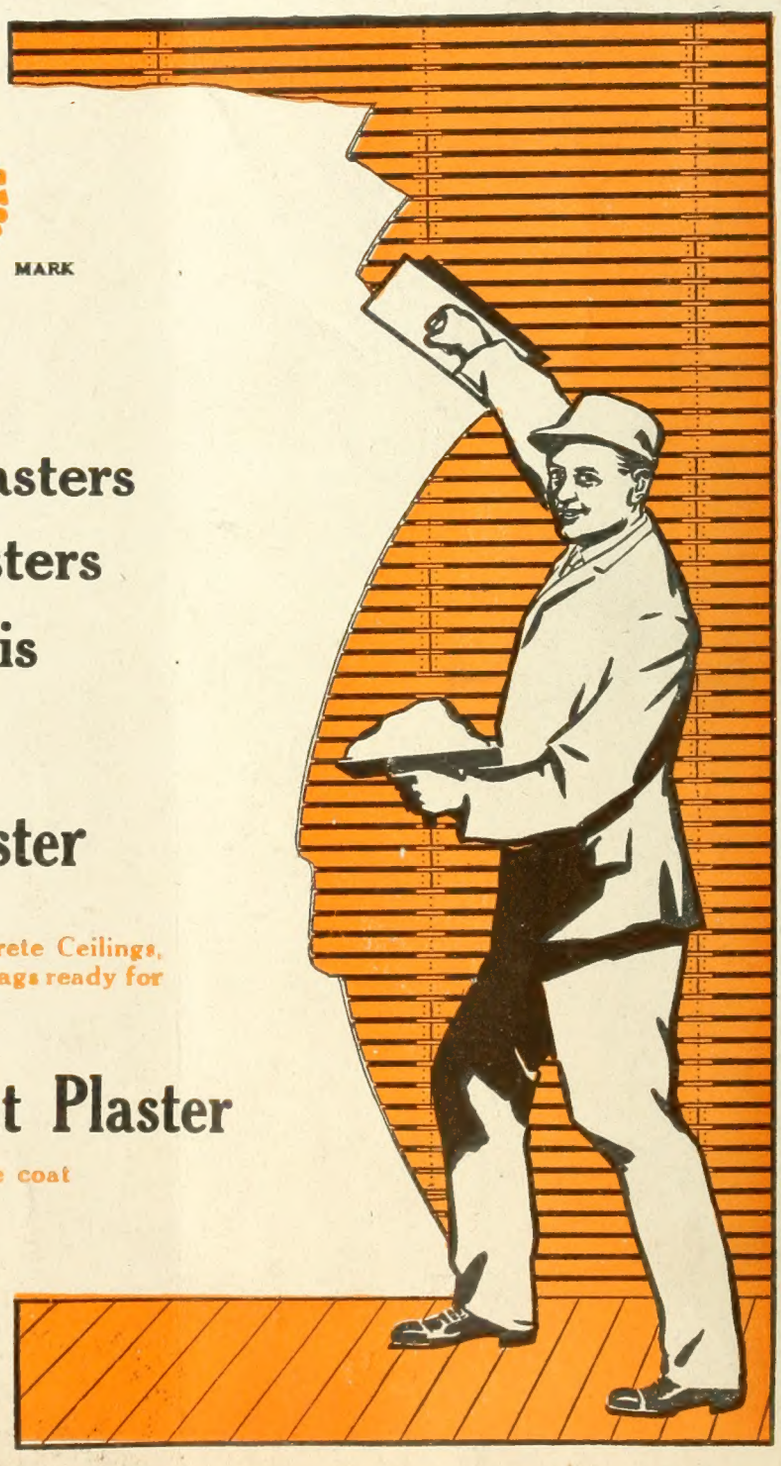
Crown Gypsum Co., Limited

MANUFACTURERS

HIGH GRADE GYPSUM PRODUCTS

TRADE MARK

CROWN



Hard Wall Plasters

Finishing Plasters

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For plastering directly on Concrete Ceilings, Beams and Walls. In 100 lb. bags ready for use.

"BEAVER" Cement Plaster

A neat hair fibred base coat

Mines, Mills and Office located at Lythmore, Ontario, Canada

CROWN GYPSUM CO., Limited, Lythmore, Ont., Canada